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THE WILSON BULLETIN
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SUMMER BIRDS OF BROWNSVILLE, TEXAS

BY M. W. DE LAUBENFELS

Like many others, I got much of my start in studying birds, as a boy, from Reed's "Bird Guide" with its colored pictures. Perhaps many others have, as I did, gazed fondly at certain particularly gaudy pictures there, and longed to see the originals. Many of us may even have doubted that such odd birds really did exist. The years went by, and we saw most of the others, but this group remained unseen and fabulous. There was the unbelievable green jay, the vivid derby flycatcher, the impossible looking groove-billed ani, the bizarre seedeater, and others with such romantic names as cara-cara and chachalaca. At last my dream of years has come true and I have seen the land where kingfishers are green, and roseate spoonbills are common.

The region of extreme southern Texas is deservedly interesting to the nature-lover. My highest hopes for it were not disappointed. The purpose of this article is to give something of an idea as to what one might expect to find were one to visit the Brownsville area in the summer time.

The valley of the lower Rio Grande is emphatically Mexican in type. One notices a very decided change, ecologically, when coming into it from the north, and little or no further change upon passing across the border south into old Mexico, though there is a big change, of course, in the people and buildings. If one enters this region from the Pacific side of our country, one leaves behind deserts studded with yucca; if from the Atlantic side or from the north,—cultivated country of cotton and corn. In either case one enters a wilderness of mesquite. None of the trees are much over a height of fifteen feet, yet few are much under that height. They are so close together that their gray-green foliage interlaces, and as any one who has ever tried conclusions with mesquite knows, they are thorny. A few other trees occur, second place probably going to a related tree—which is locally called "Ebony"; it has foliage of similar shape but much darker, richer green, and is even thornier; third place goes to yet another related tree, which is called "Crown of

Christ" because it is practically all thorns. The palo verde tree occurs, and is thornless, but the undergrowth is pretty bad. There are great quantities of a cactus, *Opuntia lindheimeri,* which has some of the nastiest little thorns I ever had in me, even worse than cholla. Others present are *Echinocereus longhimatus* and *Mammilaria hemispherica;* these have lovely flowers and thorns that are more easily avoided. Where irrigation water is available, as for instance from the Rio Grande, there are clearings planted to citrus fruit, cotton, etc., which show indications of a very fertile soil. There are occasional heavy rains, but in general the uncultivated plants depend for their water on the very heavy dews of the region. These dews are so heavy that with a metal roof (such as corrugated iron) one can keep a rain barrel filled as though a slight shower fell each night. The nights are very hot, and the humidity is so great that anything that will possibly rust, mold or mildew, does so with great promptness and thoroughness.

There are many interesting mammals here: deer and coyotes are numerous, though hard to find in the mesquite jungles. Armadillos and the banded peccary or javeline occur. Snakes are said to be abundant, but I was unable to find many. The collector of insects, or of snails, will find this a rich field.

There are great numbers of birds, but as well hunt for needles in hay-stacks without a good deal of direction. There is only one man in the locality to whom one can go for this help, but fortunately he is both familiar with the country and with the birds and other wild life; this is Mr. R. D. Camp, a true naturalist. He is the game warden for the vicinity. His advice and guidance had a great deal to do with my success in finding the birds and other points of interest.

On June 25th, 1924, I got off the train in Brownsville, Texas. That date is far too late for best results, but was the earliest possible for me; make your trip there in May or early June if you can. The first thing that impressed me was that the commonest birds in town were in this order:

1. Great-tailed Grackle—*Megaquiscalus major macrourus.*
2. Western Mockingbird—*Mimus polyglottos leucopterus.*
3. English Sparrow—*Passer domesticus.*

The grackles are comical birds, seemingly barely able to drag their gigantic tails through the air. They have a surprisingly large vocabulary of whistles, squeaks and rasping rattles.

The mockers were as full of songs and noises of every description as mockers usually are. Unfortunately we are all too familiar with the English sparrow.

One takes a street car to the west part of town, and here among beautiful lawns and gardens we found many birds, some not often found out of the town itself, particularly

4. Buff-bellied Hummingbird—*Amizilis yucatanensis chalconota.*
5. Red-eyed Cowbird—*Tangavius æneus involucratus.*
6. Sharpe Seedeater—*Sporophila morelleti sharpei.*

None of these three is common enough that one could count on finding it. The hummer, which is the only one ordinarily present in the summer, is much as described, the red color of the bill, however, being much more conspicuous than I had expected. The cowbird is a lustrous velvety individual, with staring red eyes that stand out like jewels in his head. The seed-eater is the one that is called "Morellets" in Reed's Guide. The first one we saw was in the full male plumage as illustrated in the color-key referred to; this was a piece of great, good luck, as the great majority of all our finds are either females or males in the dull immature plumage.

We soon also became familiar with the only two woodpeckers of this region, both of which are common everywhere, and the two thrashers, who were quite as much at home in the yards in town as they were in the "brush" or "forests,"— whichever you call them, out of town.

7. Golden-fronted Woodpecker—*Centurus aurifrons.*
8. Texas Woodpecker—*Dryobates scalaris symplectus.*
9. Sennett Thrasher—*Toxostoma longirostre sennetti.*
10. Curve-billed Thrasher—*Toxostoma curvirostre curvirostre.*

The Mexicans call the woodpeckers "Carpenters." The first of the two is reminiscent of a flicker, especially when showing the rump in flight; it has a big blonde top-piece, like some Scandinavian maiden's long blonde hair. The other is an inconspicuous little fellow of the nuttall-downy type. Sennett's thrasher is very much like the eastern brown thrasher. The curve-billed resembles the dull colored Palmer's thrasher of Arizona, and is far less curved of bill than some others, such as Crissal's thrasher.

11. Sennett Oriole—*Icterus cucullatus sennetti.*

The vivid gold and black of the hooded oriole vied with the brilliance of the flowers in the gardens, and then we found we

had passed out of the city proper into the country, where cultivated fields were set off by tree-shaded irrigation ditches, but the beautiful orioles were still with us.

12. White-winged Dove—*Melopelia asiatica asiatica.*
13. Western Mourning Dove—*Zenaidura macroura marginella.*
14. Mexican Ground Dove—*Chaemepelia passerina pallescens.*
15. Inca Dove—*Scardafella inca.*
16. White-fronted Dove—*Leptotila fulviventris brachyptera.*

Among the ranches, or farms, or plantations,—what you will call them depends on which of the three great sections of the United States you come from,—the most abundant summer bird is the white-winged dove, and doves in general are supernumerous. The stubby little ground doves, hardly bigger than sparrows, are common, and show a pretty bit of cinnamon red under their wings when they fly. The mourning doves are even more common, but their soft "cooing" is rather lost in the chorous of the white-wings. These handsome birds challenge each other loudly, "who cooks for you?" and the others send back the same question as their only reply. I did not find the inca dove, which is said to be a commonplace sight in certain sections of the city itself; it does not venture out into the country much. We did, however, have the treat of finding one of the rare big white-fronted doves.

Before we were back from our first short two hour walk in West Brownsville, we had added the following birds to our lists:

17. Gray-tailed Cardinal—*Richmondena cardinalis canicauda.*
18. Long-tailed Chat—*Icteria virens longicauda.*
19. Couch Kingbird—*Tyrannus melancholicus couchi.*
20. Black-crested Titmouse—*Bacolophus atricristatus atricristatus.*
21. Orchard Oriole—*Icterus spurius.*
22. Yellow-billed Cuckoo—*Coccyzus americanus* (sub-species=?).
23. Small White-eyed Vireo—*Vireo griseus micrus.*

This latter we found very abundant, and its notes seem to me totally unlike those of the white-eyed vireo of the southeastern states. That bird has a rich vireo-like tone, and sings a song of the "Tweedle-oodle-whee-ooh" type; the Brownsville bird has a flat, sparrow-like song of the "Cheep-cheep-chippy-ippy-cheep" type, at its best resembling the vesper sparrow. The titmouse has call notes much like those of the common tits, and habits, and looks, too; his black cap sets him apart, but that is all. The kingbird is like all his relatives in character, but seems even more brightly yellow than the Arkansas kingbird. The

chats of the lower Rio Grande region seemed to me the tamest of any I ever found. The cardinals, indistinguishable in the field from the common cardinal, were here delightfully abundant, an always welcome sight in town and country.

During the following days we found that some of the best places for birds were on the shores of some of the resacas. A professor of Spanish language assured me that resaca meant a swell, or drift of current in the ocean; that is far from being its local usage, however. At various times in the far distant past the Rio Grande has evidently used other exits to the Gulf of Mexico than the present one, and the abandoned courses are still there, full of stagnant water, like rivers that have died. Much of their banks is covered with dense growths of luxuriant semi-tropical vegetation, with vines much in evidence. The air about them is so thick with mosquitoes that one might cut it (or should I say "them") with a knife; but why dwell on the unpleasant? In these jungles occur certain kinds of birds as follows, first what we may call the water birds, then the land birds.

24. Mexican Grebe (San Domingo Grebe)—*Colymbus dominicus brachypterus.*
25. Pied-billed Grebe—*Podilymbus podiceps podiceps.*
26. Black Tern—*Chlidonias nigra surinamensis.*
27. Anhinga—*Anhinga anhinga.*
28. Mexican Cormorant—*Phalacrocorax vigua mexicanus.*
29. Lesser Scaup Duck—*Marila affinis.*
30. Little Blue Heron—*Florida cærulea.*
31. Green Heron—*Butorides virescens virescens.*
32. Black-crowned Night Heron—*Nycticorax nycticorax navius.*
33. Purple Gallinule—*Ionornis martinicus.*
34. Florida Gallinule—*Gallinula chloropus cachinnans.*
35. American Coot—*Fulica americana.*
36. Killdeer—*Oxyechus vociferus vociferus.*

The least grebes (or Mexican grebes) are rather widely distributed in the resacas, but they can stay under water so successfully, and have so many hiding places, that it is not easy to find them. We did, but it took lots of patience with the clouds of mosquitoes adding their peculiar charm; in the process we found one pied-billed grebe, here less common than the first mentioned. The black terns and anhinga or water-turkey are regular but not very numerous inhabitants of these bayous. We found only one lesser scaup duck, probably unmated, and only one small colony of the little blue herons, but this a very interesting one because

of the varieties of plumage represented: some were in the ordinary maroon and slaty-blue uniform, others in the white phase so that they resembled egrets, while others were in checkerboard mixtures of the two plumages. The green herons were not colonial, but scattered here and there throughout the district. The night herons were nesting in the same clump of trees with the little blues, and out numbered them considerably; I would judge about fifty adults of the former to twenty-five of the latter.

The purple gallinule is a sore subject to me, for though supposedly not rare I was unable to find any, and not for lack of effort. Time and again I patiently stalked or waited out likely marshy spots, finding dozens of Florida Gallinules, even getting some intimate glimpses into the family life of this bird, but with no success in locating its more brilliant cousin. Coots are common, but only one killdeer was found.

37. Chachalaca—*Ortalis vetula mccalli.*

We did some special hunting for the chachalaca, as it is a very shy bird. First we went with a native hunter who was supposed to be a wizard at finding them; we heard their distant laughter, but that was all. With surprising virtue our guide refused pay, having been unsuccessful. Next I tried sleeping out alone in the brush in order to wake up right in their territory—a method which often gives daybreak views of timid birds not to be found later in the day, but it didn't work with the chachalaca. Finally Mr. Camp led me, both of us doing some remarkably patient stalking, in one of the most mosquito-infested places in the United States outside of Florida, and this time the chachalaca was found.

38. Texas Screech Owl—*Otus asio mccalli.*
39. Groove-billed Ani—*Crotophaga sulcirostris.*
40. Texas Kingfisher—*Chloroceryle americana septentrionalis.*
41. Merrill Parauque—*Nyctidromus albicollis merrilli.*
42. Derby Flycatcher—*Pitangus sulphuratus derbianus.*
43. Mexican Crested Flycatcher—*Myiarchus magister nelsoni.*

The only notes I heard from the Mexican screech owl were dove-like, not quite like those of the eastern screech owl, and some conversational calling like that of the southern California bird. The Mexican crested flycatcher is not greatly different from any of the other crested flycatchers.

I was especially interested in the groove-billed anis. I looked in vain for any of the colonial nesting one hears about,

where a large number of females prepare a big nest in common; this, it seems, is not the rule in the United States. I did find them interesting clowns to watch, with amazingly big beaks on which one could see the groove quite plainly. They are as large as the grackles, and as black, so that but for the difference in shape the two species might be confused. The ani looks overloaded in front, while the grackles look overloaded at the other end, and are much the more abundant everywhere.

The derby flycatcher and the kingfisher are two of the most impressive birds, to my notion, in America. The derby seems to fill the landscape, figuratively speaking. He is large, he perches in an exposed place, and he is very conspicuous; the black and white and yellow striping of the head, the vivid yellow underparts, and the venetian red wings and tail are decidedly "loud." A family of four infants that I saw were also loud vocally. The kingfisher, on the other hand, while he perches where he can be plainly and rather easily seen, is rather remarkable for a quiet sort of beauty. His shape is odd, for the head and bill seem larger than all the rest of him put together. The general color is a handsome green, and there is a brick red band, like a vest, across his chest, which is sufficiently patterned with black to keep it from being too gaudy. The parauque is a brown bird of the whip-poor-will type; we found a whole family of them in one place, papa, mama, and three little parauques. They hunt the larger insects at dawn and dusk with the nighthawks.

44. Green Jay—*Xanthoura luxuosa glaucescens.*
45. Dwarf Cowbird—*Molothrus ater obscurus.*
46. Rio Grande Redwing—*Agelaius phœniceus megapotamus.*
47. Audubon Oriole—*Icterus melanocephalus auduboni.*
48. Western Lark Sparrow—*Chondestes grammacus strigatus.*
49. Texas Sparrow—*Arremonops rufivirgatus.*
50. Texas Pyrrhuloxia—*Pyrrhuloxia sinuata texana.*
51. Western Blue Grosbeak—*Guiraca cærulea lazula.*
52. Florida Yellowthroat—*Geothlypis trichas ignota.*
53. Lomita Wren—*Thryothorus ludovicianus lomitensis.*
54. Texas Wren—*Thryomanes bewickii cryptus.*
55. Blue-gray Gnatcatcher—*Polioptila cærulea cærulea.*

The green jay is a guilty seeming bird, and clever at hiding. His bright colors blend with the greens of the foliage, from which he stands out only because of the lemon yellow in his tail, and his jet black bib. His notes, though harsh, are quite different from those of any other jays occurring north of Mexico. They

are hard to describe, being perhaps nearest to certain "chacks" and calls of some of our blackbirds.

The cowbird, redwing, lark sparrow, grosbeak, and gnatcatcher are very much like their relatives with which most American bird students are familiar. The lomita wren is just a sub-species of the Carolina wren, and little different from it; similarly the Texas wren may be compared to the Bewick, of which it is a sub-species.

Audubon's oriole is remarkable, as compared to most orioles, for its pale lemon color instead of golden yellow or orange; it looked to me even paler than the Scott oriole, and more greenish. The pyrrhuloxia is not supposed to be rare, but I saw none, though their notes are near enough like those of the cardinal that they may have been overlooked among the frequent cardinal songs. The Texas sparrow was a bird of which, for some reason or other, I had not heard. It is not obtrusive, but well worth looking for; it may be best compared to the green-tailed towhee, and is of similar general coloration, but lacks the auburn top-piece of the towhee, and of course is smaller, though large for a sparrow.

In taking up the birds as I am doing, by the ecological groups into which they seem naturally to fall, one group may be made of the "over-head" birds, which, because they are flying high, are largely independent of ecological associations within the region, though the region must, of course, be suitable.

56. Turkey Vulture—*Cathartes aura septentrionalis.*
57. Black Vulture—*Coragyps urubu.*
58. Aserri Nighthawk—*Chordeiles minor aserriensis.*
59. Texas Nighthawk—*Chordeiles acutipennis texensis.*
60. Lesser Cliff Swallow—*Petrochelidon albifrons tachina.*

The two vultures are both common, and one about as numerous as the other. It is harder to compare the relative abundance of the two nighthawks. One can tell by the notes that both kinds are present in the groups hawking around, and occasionally find one sleeping in the day-time where careful identification is possible; from these indications it would seem they, too, are about equal in numbers. Chordeiles minor advertises its presence by the nasal "peehnt" so familiar to most of us; the Texas nighthawk has a bubbling note like the murmuring of a screech owl, and a wild clear whistle "whee-whee-whee ooh." Swallows of any kind are, for reasons I cannot understand, rare in the

Brownsville region; the little one they have, supposed to be a sub-species of the cliff swallow, looks very different from any I ever saw. Its head and foreparts are almost solid dark brown; chestnut, the books call it, but it looked almost chocolate brown to me, and the rump is not conspicuously light in color at all. We found it mostly over the Rio Grande.

The area nearer the Gulf of Mexico is an entirely different type from any described above. Here the ruling ecological factor is lack of fresh water. One of the most conspicuous items is the extreme flatness, and elevation of even two or three feet is noteworthy. The soil is between silt and sandy. The most conspicuous plants are a few yuccas (Spanish bayonet), there are various cacti, and harsh, coarse grass. Much of this plain is under water, with a shore-line that doesn't stay put, since a few inches difference in water-level moves the shore-line several feet. Only a little effect of the tide from the gulf is noticed, a matter of inches, though the gulf is the source of this water. Some of these lagoons are gigantic, particularly the Laguna de la Madre, which is over one hundred miles long, and about five to ten miles wide, and yet but little of it is as much as four feet deep, and most of it is quite easily waded.

Laden with canteens of what proved to be all too little water, we ventured out for a two day exploration of this desert. If anyone else plans such a trip, be sure to take plenty of water, and be sure you have your directions where to go, since you will either fail to find the best places for birds, or at best waste a lot of time in finding them, without careful directions, such as Mr. Camp gave us. The following birds are typical of this plain (taking the raptores first):

61. Harris Hawk—*Parabuteo unicinctus harrisi.*
62. Western Red-tail—*Buteo borealis calurus.*
63. Sennett White-tailed Hawk—*Tachytriorchis albicaudatus sennetti.*
64. Aplomado Falcon—*Rhyncofalco fusco-cærulescens septentrionalis.*
65. Audubon Caracara—*Polyborus cheriway audubonii.*

The commonest of these is supposed to be the Harris hawk, a handsome mahogany colored bird with a conspicuous white rump. The white-tailed hawk is another noble looking, big, showy bird of prey, its name being descriptive. I found the caracaras the commonest of these four; they are at least easy to find! They take no pains to hide, they are glaringly pie-bald in black and white, with bright red face, and though they are somewhat awk-

ward, I thought them decidedly artistic in appearance, at least at a distance. We did not see the Aplomado falcon during my stay in the vicinity, but Mr. Camp showed me a this year's nest.

66. Texas Bob-white—*Colinus virginianus texanus.*
67. Road-runner—*Geoccyx californianus.*
68. Scissor-tailed Flycather—*Muscivora forficata.*
69. Texas Horned Lark—*Otocoris alpestris giraudi.*
70. White-necked Raven—*Corvus cryptoleucus.*
71. Rio Grande Meadowlark—*Sturnella magna hoopesi.*
72. Black-throated Sparrow—*Amphispiza bilineata bilineata.*
73. Cassin Sparrow—*Peucæa cassinii.*
74. Painted Bunting—*Passerina ciris ciris.*
75. Cactus Wren—*Helcodytes brunneicapillus couesi.*

This group is less peculiar than most of the others, largely because there are other places rather similar in ecological factors: scant rainfall and heat; this region is noteworthy in that high humidity, instead of aridity, may be added to the list.

The bob-whites that I saw were frequently in pairs, and as I have noted on previous occasions, with other gallinae, often in single file, *with the female always leading;* has this observation been the result of coincidence, or have other observers noted this, too?

We found it necessary to collect one of the Cassin sparrows to be sure of the identification, as the very similar Botteri sparrow occurs here also, though not in large numbers.

At one time curiosity was expressed as to the relation of the songs of the sub-species of meadowlarks, and I have taken pains to observe this carefully, and having lived both East and West, have had opportunity to become familiar with the very different songs of the eastern and western meadowlarks; the birds of the lower Rio Grande region sing exactly like the Ohio birds, but those of extreme southern Arizona, which I understand are supposed also to be the Rio Grande meadowlark, sing a song which is a perfect blend of the tunes and tones of magna and neglecta.

Much could be written about the other birds of this litte group, but as they are typically birds of other regions, I don't believe the details are necessary here.

There are islands in the lagoons of this plain, and to avoid the coyotes, the water-birds nest on these islands in crowds. While a man can wade out to these islands rather easily, this shallow water is usually, though not invariably, as safe a barrier as deep water would be. The water is literally swarming with

fish, apparently mostly of the mullet type, and this accounts for the presence of the fish-eating birds in such numbers. Crabs are exceedingly numerous too, on the land as well as in the water, and judging from their excrement, the coyotes live almost entirely on these crabs. Several of these above-mentioned islands have already become famous for their bird life, especially Green Island and Bird Island (The "Condor," Jan-Feb., 1922, and Sept.-Oct., 1922). With directions from Mr. Camp we found an island, nameless, but at least as interesting, if not more so. As one must charter a sail-boat at considerable expense to reach the other "bird islands," the fact that wading a mile or so was all we had to do to reach this one made it worth the long walk over the plain.

When we reached the shore, we found several marshy areas, with characteristic birds, as follows:

76 Mottled Duck—*Anas fulvigula maculosa.*
77. Black-necked Stilt—*Himantopus mexicanus.*
78. Western Willet—*Catoptrophorus semipalmatus inornatus.*
79. Long-billed Curlew—*Numenius americanus americanus.*
80. Wilson Plover—*Pagolla wilsonia wilsonia.*

The stilts and curlew were probably not breeding, but just left over, unmated, from the migration; the others breed here, though we did not find any nests, being too anxious to get out to the island to look for them. On the island there were present and breeding:

81. Laughing Gull—*Larus atricilla megalopterus.*
82. Gull-billed Tern—*Gelochelidon nilotica.*
83. Caspian Tern—*Sterna caspia imperator.*
84. Royal Tern—*Sterna maximus.*
85. Cabot Tern—*Sterna sandvicensis acuflavidus.*
86. Forster Tern—*Sterna forsteri.*
87. Least Tern—*Sterna antillarum antillarum.*
88. Black Skimmer—*Rynchops nigra.*
89. Reddish Egret—*Dichromanassa rufescens.*
90. Louisiana Heron—*Hydranassa tricolor ruficollis.*

As we stood on the shore our guide pointed out the location of the island, and then we could make it out with binoculars, as a streak over which thousands of terns were hovering, and to which streams of them were flying in a very business-like manner carrying fish in their bills. While watching I made my notes as to the vocabularies of the various species, for when we reached the nesting grounds the noise was too deafening to distinguish individual birds and species.

After wading the mile or so of water, nowhere knee deep (there was enough sand mixed with the mud so that one did not sink in far), we found several small mud islands, with a general elevation of about four inches, ponds within their own limits, and a total area, including the ponds, of scarcely eight acres apiece. This year all the nesting was on one island; some years others are used, or even two or all three islands. There were few plants present, any as much as twelve inches high were noteworthy; they were of the type common to salt-soaked areas, with few, or very small, or no leaves, thick succulent stems, and rather tough epidermis.

The blazing sun was reflected from the water, so that we felt its effects doubled, and our shortage of water left us suffering with thirst which we only dared partially abate with grudging sips from our canteens, but, thank the Lord, there were no mosquitoes. The birds, especially the skimmers, dove at our heads alarmingly, but in a little while we observed that they always swerved up enough to miss us, each time, just before impaling our skulls,—then we walked about more comfortably. One last hardship needs mention, the need of constant care lest we step on eggs or young; for all our care occasionally an egg would go "pop."

J. R. Pemberton, in the "Condor" for Mar.-Apr., 1922, took up in detail the nesting of terns in Texas; most of what I might say would only be duplication, as my observations merely confirmed this. For the benefit of those who have not seen his article, however, I will give brief notes.

The terns were commoner than the gulls, but there were more of the laughing gulls than of any one kind of tern. A count of a fraction of their nesting area, multiplied by the estimated extent of their field, (the safest way to get trustworthy estimates of numbers) gave their census as about 2,500 nests, that is to say, about five thousand adults. Their notes do not sound at all like laughter to me, they are loud nasal cries or whines, somewhat like the syllables "queer" or "kay-ear." Many individuals showed hardly any red in the bill at all. They hid their nests in the thickest part of the vegetation, and their infants hid there too, and so efficiently that it was necessary to "paw over" the plants to find them. For all I know, we may have stepped on some in walking around, though we tried hard not to.

The skimmers went to the other extreme, and seemed to try to nest as far as possible from cover, which placed them in two groups by themselves near the north and south sides of the island. Their notes are varied, are almost like the call of the crow, but instead of just "caw," they say "charrp" or "harrk," etc. To say they had nests is hardly accurate, for they merely deposit the eggs on the ground: full sets were of three or four. We found places where their eggs were just scattered around promiscously and many of them spoiling. Had other birds, perhaps some of the young terns that were running around, jostled them into this disorder? There was no sign of any attempt having been made to eat them. As there has been a little discussion as to the feeding habits of this species, I spent quite a little time watching the adults "skimming" to see how they ate. The more recent articles state that they do not eat while skimming, but while standing in shallow water. I am convinced to the contrary. I saw none of that either in Texas or Florida, but did see a good deal of what was clearly, unless my eyes deceived me, catching of objects while flying as they do, with the lower mandible cutting the water. The whole operation is performed so quickly that close attention is necessary: the object is first seized as by a pair of scissors, then with the same motion (started by the upward snap of the lower mandible) the object is given a slight toss, and caught in the mouth proper. Note that to leave conjecture as far as possible, the words "small object" are used; I think they were eating small fish, but am not sure. They were certainly not eating any fish over two or three inches long while I watched them.

The terns' nests were scattered all over, and as I am no oölogist, I could not tell from the eggs which was which: they all vary greatly within the species, and all the different kinds have variations similar to those of the other kinds. This may have affected the accuracy of our count of nests. The gull-billed terns were the most numerous (see table of estimates below) and while never quite as demonstrative as the skimmers, they began making a fuss about our arrival the longest time before we reached the nesting area, and kept it up the longest after we started away. The least terns, too, kept about us so assiduously that we made estimates of their numbers far above what the count of nests indicated; this may be due to the presence of other nearby small colonies of this bird, from which the mob about

us was partly recruited; in this case the estimate given below should be increased. With all the terns the large size of the fish brought by the parents was noted, I found four-inch fish in the nest with nestlings only six inches long. I didn't succeed in seeing these youngsters wrap themselves around such meals, though they pecked at the fish when I started to remove said fish from the nest.

Think of stepping over herons' nests! We had been accustomed in other parts of the country to finding them high in trees. Well, at that, they did the best they could and still stay within easy flight of this wonderful food supply. They had the very highest locations available, sometimes as much as fourteen inches off the ground! Like the terns, the inclement season had put back their nesting, so that weeks after all the young should have been flying, some were still in the egg, and others barely hatched. I have seldom had so many fine subjects for the camera just waiting to be "took," and the high school boy who accompanied me on this trip snapped at view after view. Alas for our hopes, after we were far away we found that an accident to the camera had rendered every picture a little out of focus, so that not one was suitable for reproduction in half-tone. Some of the pictures of the dignified army of young terns, just not quite able to fly, and seemingly well drilled by some army sergeant, were very interesting, as well those of the ludicrous young herons and egrets of varous ages.

Our estimates of the population of the island follow:

Laughing gull	5000	Gull-billed tern	3000
		Caspian tern	1000
Black skimmer	1000	Royal tern	500
		Cabot tern	300
Reddish egret	50	Forster tern	1500
Louisiana heron	400	Least tern	50

These figures are for adults, and are based on the method indicated in the remarks concerning the counting of the laughing gulls.

Some of the very most interesting to me were not breeding on the island, either being non-breeding individuals left behind in migration (the pelicans) or being strays from other breeding places, attracted here by the abundance of fish:

91. American White Pelican—*Pelecanus erythrorhynchos.*
92. Roseate Spoonbill—*Ajaia ajaja.*
93. Wood Ibis (Stork)—*Mycteria americana.*

94. Ward Heron—*Ardea herodias wardi.*
95. Snowy Egret—*Egretta candidissima candidissima.*

The last mentioned was here the most timid of all: in Florida and California I have found them almost stupidly tame. The Ward herons, too, were quite wild. The spoonbills were to me a decided treat, and as the saying is, I "feasted my eyes" on them. In life they are far richer in color than museum specimens would lead one to expect; specimens must evidently fade much. They were gorgeous, lovely, spectacular. We saw seventy-seven in one flock, and later saw one of about half that size, presumably, but not certainly a second bunch.

There is a happy ending to this that is not always the case. Texas has recently set this island apart as a sanctuary, so that with legal protection, good wardens on the job, few predatory birds, comparative safety from beasts of prey, and abundant food, these birds should thrive. I understand that much credit for all this belongs to Dr. Pearson of the Audubon Society, and to Mr. Camp, "patron saint" of the Brownsville birds.

THE RELATION OF THE CROW TO PECAN CULTURE

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The common crow is a widely-distributed and well-known bird. Literature is replete with references to this black denizen of forest and field. It is one of the first birds for which we have critical food-habit studies, but in spite of this fact, its real economic status is still a mooted question. On first thought it might seem surprising that the bird's beneficial and injurious traits have not been listed, and a balance declared either for or against it. When, however, we consider the fact that over 650 specifically different items of food have been identified in the stomach contents of the crow, we can see wherein the solution of the problem might not be as simple as at first thought. If we find grain present in the diet, our principle concern is whether the grain was waste grain or utilizable grain. Even if at times it be other than waste grain, we still might object provided the crow's services throughout the rest of the year compensated for it. But when we come to consider the crow's destruction of the smaller mammals, batrachians, reptiles, insects, and crustaceans the question is not so simple. Our knowledge

of the exact inter-relations of each of these forms in the complex of nature is too incomplete for us to more than hazard a guess as to the ultimate effect of the destruction of any one of them. We find this same difficulty presenting itself when we consider measures for conserving the wild life of both land and water. Consequently the need is great for life-history and food-habit studies of all our animals excepting those already well known. Any careful observations which help us to understand the relation of a given animal to the other animals or to the plants of the community may be considered a contribution toward the ultimate evaluation of its economic status.

With this aim in view the writer wishes to record some of his observations on the habits of the crow. These observations were made for the most part in the northeast corner of Grant County, Oklahoma, and cover a period of several years. A monetary interest rather than an ornithological one prompted the study. When crows began to make serious inroads upon the pecan crop, the problem became an urgent one. Up to 1912 or 1913 crows were not numerous in this locality and were seldom seen during the summer. About this time, however, they became more noticeable during the summer months and an occasional nest was found. During the winter good-sized flocks of them could be seen feeding in fields and pasture lands, especially those near wooded areas. A year or so later it was learned that upstream a distance of about three miles, "as the crow flies," a roost had been established. Just when this occurred nobody seems able to say. We were aware of an upstream movement of the crows at night, and had noticed their return the following morning, but had not given the matter much thought. The crow roost is separated by perhaps a mile of wooded territory from the nearest human habitation. The nearby farmers were aware of the fact that the crows were spending their nights in a certain clump of trees, but never actually investigated the spot until after the roost was well established. The roost has accommodated more birds year after year and has accordingly increased in area.

It would be valuable to know just what factors caused the crows to establish a roost at this place, to commence breeding in greater numbers in the general vicinity, and to greatly increase in numbers during the fall and winter. Before this territory was opened up for settlement the land had been practically

deforested by people living across the line in Kansas, because they found here a convenient place to get their building material, fence posts, and fire-wood. The area had also been swept by fire. After homesteads were filed, the forest was cared for and allowed to reëstablish itself. The native pecan grows slowly and does not bear early, consequently it has only been within the last few years that the nut crop has become large. It seems probable that in the gradual increase in the pecan crop, and the discovery of the nuts by the crows, we have important factors leading to the present situation.

As early as 1888 the crow was reported as doing considerable damage to the pecan crops in parts of Louisiana and Texas. In the locality under discussion, however, feeding upon pecans seems to be a habit recently acquired, because the few crows seen here in earlier years were never observed paying attention to the pecans.

In the past few years, however, crows have become numerous about two weeks before the ripening of the pecans (middle October) and commenced carrying away the green nuts. They arrive at the pecan groves before sunrise, while it is still too dark to see the sights on a gun, and settle on the trees. The first ones to secure pecans fly to the ground or nearby fence posts and eat them. When the flock moves those which have not finished eating carry their pecans with them. Usually there are one or two crows in the flock that do not have a pecan, and since these individuals are busy cawing, it would seem to be a part of the general plan, and not an accident. On one occasion all but two of a flock of 200 crows had pecans. In flight their paths cross and recross so many times that it is impossible to decide whether the one or two without pecans are functioning as leaders or not. After securing a pecan each the crows leave for the time being, following in a general way down Bluff Creek valley to the southeast, but return in a half to three-quarters of an hour for another round. If they are successful in this second attempt they do not return as a flock until about four-thirty in the afternoon, when they secure another helping of the nuts on their way to the roost. A few stragglers often remain in the grove, or near it, throughout the day. If when passing over in the morning the crows are frightened, they will drop their pecans, but will return as soon as the danger is apparently over, each to secure another pecan. On several oc-

casions the writer has tried frightening the birds as soon as they began circling the grove to see how long it would take to discourage them. Each time they would remain away for a longer period, but would make about a dozen return trips in the course of the forenoon. When not allowed to feed they became discouraged about noon and with much cawing flew away to the southeast. On several occasions the crows were followed in an attempt to ascertain where and how they spent their days. Care was taken to select days that seemed to be like the average, as it was thought stormy days might alter their regular routine somewhat. On such occasions they were not molested during their early morning feed, the idea being to let the day's events take a normal course. For a distance of five miles or more they remained pretty well together and flew rather rapidly. Those dropping out of the line of flight seemed to be the ones which were carrying pecans with them. Pecans have been found five miles from the grove, but the majority of those noted were at a distance of about three and a half miles.

After covering the first five miles the crows resumed cawing and circling, but to a lesser degree than when feeding at the grove. This seemed to be the signal, "as foragers" (to copy an army term), for the crows then scattered a great deal. Some retraced their flight, some went ahead, while others flew at right angles to the course of the flight. They would alight in trees to survey the territory and then descend into the fields. Here they were busy picking up food, but it was for the most part impossible to get close enough to determine its nature. Only occasionally could the writer slip up close enough to one or two crows, feeding among trees and shrubs, to observe them secure beetles from beneath fallen leaves. The major portion of the flock worked its way in a general southeasterly direction. By noon they would be some fifteen miles from the grove, or eighteen miles from the roost. At this point crows from a different locality, (perhaps a pecan grove some eight or ten miles farther on) were encountered, and the identity of the flock under observation could no longer be traced. Beginning the return trip to the grove, crows were observed along the way, in groups of two or three, feeding and flying about. By three o'clock the same afternoon at a point about twelve miles from the grove it was noted that the general direction of flight taken by the feeding crows had changed from the south east to the

northwest. The flights between stops to feed were becoming longer and less leisurely than they were in the morning. About four o'clock the first crows reached the pecan grove. Some of these were observed to secure two pecans, but the greater number of the flock secured only one before wending their way on upstream to their sleeping quarters.

The crows waste more nuts than they eat. If frightened they often drop them. Especially is this true when they are attempting to open the shell. A fence at the south edge of the grove afforded a good place for the crows to feed. They would alight on the posts, hold the pecans with their feet and peck at them until the shells split, or until they pecked a hole through them. When a hole was made they inserted the bill and beat the pecan against the post. The long, slender nuts seemed to afford better leverage and split more readily. Daily during the height of the pecan season a handful of nuts could be picked up at the base of each fence post. The predominance of the longer nuts at the posts seemed to indicate that the crows purposely selected this type. The crows seldom flew to the ground for the pecans they dropped while feeding on the posts, and never for those dropped in flight. Instead of so doing they circled the grove and secured another nut from the trees.

The fence posts were also used as look-out posts by the crows as they returned to feed in the late afternoon. They would alight on the posts and watch and listen for signs of disturbance. If nothing unusual was in sight they would fly to a tall tree at the edge of the grove for a second reconnaissance. If the advance guard thought the coast was clear and entered the wood, the main flock would follow with but little preliminary investigation.

One morning about four o'clock the writer secreted himself on the northeast edge of the grove to witness the morning invasion of crows. While it was still too dark to take aim with a gun the crows commenced to arrive. A flock of about a thousand alighted in a green wheat field, while a half dozen crows flew ahead and perched on the fence which runs along the north side of the grove at a distance of about 400 yards. During the arrival of the flock an occasional caw was heard, but while the crows on the posts were testing the advisability of entering the grove, all was quiet, save for a few low gurgling sounds made

by the crows in the field. When viewed at a distance the crows seemed to be feeding, but those nearby were apparently making false motions. Is it possible that they were trying to appear disinterested in the pecans? This observation was made after the crows had been shot at on several preceding mornings. Feigning a lack of interest would seem to indicate that the crow was pretty smart, but smart he is. When a crow will fly past its intended destination with no apparent interest, pass almost beyond sight, make a wide circle, and then fly with precision back to the object passed up a few minutes before, you will have to concede his cunning. By the time the flock had nearly reached the fence where the sentinels were stationed, the latter "declared" the territory safe for invasion, and with much cawing they entered the grove.

The following morning an attempt was made to hide at a place over which the bulk of the crows had passed the previous morning. The first crow to alight on a post made the discovery, gave a short, jerky, one might say angry caw, and flew back toward the flock. The flock as a whole took warning from this danger call and was on the wing before he reached them. They flew across the wheat field to some trees three-quarters of a mile distant. Curious to know their next move, the writer remained quiet awaiting their return. Half an hour later the crows entered the grove simultaneously from the east and west ends, the flock having divided since the first attempt. The writer remained hidden until the two parts of the flock united in the center of the grove. At this juncture he fired into the flock and it departed to the southeast.

At the beginning of the season it was not difficult to get within shooting range of the crows. Soon after they were shot at they would return, each time a little more cautiously. One day a crippled crow was tied to a bush with a five-foot string, to serve as a decoy. By hiding in a clump of walnut trees the writer was able to shoot a good many crows during the day. The crow was taken home over night, given food and water and used as a decoy the second day. After waiting an hour or so it became evident that the crows would not again come within shooting distance. They would circle high above the decoy or alight in trees at a safe distance. Lone crows flying high and much to one side would occasionally fly directly to the decoy. This to my mind pointed out two facts, first that the crow has

very keen vision, and second that these individual crows were not members of the main flock. The decoy was then moved to a new location. This time a second string was fastened around a wing and at intervals the string would be pulled with the result that the crow would give out a very distressed caw, caw. This call of a member in distress seemed too much for the crows to resist and several flew to the ground nearby. The new device, however, worked only two or three times. After that all the pitiful caws that could be obtained from the captive would not induce the crows to come within gun-shot. They did not leave the field but alighted on trees beyond the reach of lead.

There is every reason to believe that crows soon learn the range of a gun. The writer has repeatedly had crows encircle him just a little beyond the effective range of a shotgun. Then after being fired at a few times with a rifle widen the circle described accordingly.

Crows also exhibit a remarkable amount of cunning in their reaction to scarecrows. Almost any scarecrow will work for a time, some functioning much longer than others, but eventually even the most clever will fail to frighten them away. The writer was very proud of a "stuffed man" holding a wooden gun to his shoulder, but his pride fell at the end of a week when the crows began to alight upon it, and use it for a lookout. Scarecrows which moved, which had shiny surfaces, or which made a noise were most effective. A lid from a syrup pail was converted into a very successful frightening device. Parallel incisions were made in the tin and connected at one end, the resulting squares were pushed out so the wind would catch them and make the lid to revolve on the bolt used as a spindle or shaft. A large shaft hole caused the contrivance to squeak with each revolution. As the various devices became useless, they were moved to new locations, where they again became effective.

In order to save the pecan crop it is necessary to commence patroling the grove about two weeks before the pecans are ready to harvest. Shooting at this time does not cause them to leave the grove, but only to move to another part of it. It takes about an hour of walking and shooting to get them to abandon the pecans. Later they will attempt to come back, and another shot or so is necessary. As the season advances they are more easily discouraged and a few shots early in the morning will drive them out for the day. In the evening when they return a few shots at

the first crows will cause the main flock to detour, or go higher, flying across the grove without attempting to pilfer the nuts. At the beginning of the season the crows pay very little attention to the report of a rifle, but as the season advances it becomes as effective as that of a shotgun. At this time a few shots fired early in the morning from the house at the edge of the grove will send the crows on their southeastward journey. During those seasons when the pecan crop is not sufficient to warrant the time and expense of fighting the crows, and they are accordingly unmolested, they soon learn to spend the entire day in the pecan grove. On such occasions the crows are in all their glory, and remind one of an old-fashioned, last-day-of-school basket dinner.

The pecan crop on the farm in question varies in annual worth from nothing to $4,000, with the average well above $1,000. When unmolested the crows soon destroy the entire crop. Even when the time and expense is taken to combat them, they eat a good many nuts. Formerly leisure time could be utilized during the winter in gathering stray pecans which could not be profitably picked up at harvest time. The value of this supplement to the regular harvest often amounted to more than a hundred dollars. At present the crows get this portion of the crop, for after the pecans are no longer available on the trees, they search on the ground among the leaves for them.

Counting the actual reduction of the crop and the time and ammunition necessary for fighting the crows it becomes evident that they present a serious economic problem in this locality. Further than this, the crow menace caused the abandonment of plans to introduce the much more valuable, cultivated, or paper-shelled pecan, because it was evident that these would be even more readily plundered by the crows. Chestnuts, almonds and other nuts are also destroyed by them.

As at first suggested, the fact that the crows have become more numerous in recent years as the pecan trees have become large enough to produce good crops makes it appear as though the pecans are the chief cause for the concentration of crows in this locality. In addition to the roost thus far alluded to, a second one has more recently been started only three miles from the original site. Since the first mentioned roost is yearly increasing in size, one may well conclude that the new location is being established to accommodate additional crow visitors, rather than the old being abandoned for a new one.

The old roost is in a mixed growth of trees including pecan, walnut, elm, cottonwood, oak, and perhaps others. It is situated near a stream at quite a distance from houses and roads. The new roost, across the state line in Sumner County, Kansas, is even more ideally located. It is along the banks of a river, and except for one house, far removed from habitations. Here to some extent the crows roost in the old and very large cottonwood trees, but to a greater extent in a locust grove. This grove, covering a plat of perhaps fifteen acres, is a veritable thicket. The trees were planted originally for the production of fence posts and were planted very close to prevent the formation of lateral branches. After the trees had been cut for posts, new growth sprouted out from the stumps. This growth is now about sixteen to twenty feet high and extremely dense. Here the roosting crows are absolutely immune from human interference.

According to Mr. E. R. Kalmbach, of the Biological Survey, roosts known to have been occupied during the winter of 1911-12 in Oklahoma, were located in Ottawa, Craig, Noble, and Payne counties. Bulletin No. 128 of the Oklahoma Agricultural Experiment Station, published in October, 1919, records crow roosts in Lincoln, Logan, Garvin, Grant, Kay, Oklahoma, and Garfield counties in addition to Payne county which was listed by Mr. Kalmbach. The crow roost noted for Grant county is situated near Honeyville and is a different one from that referred to in this paper as occurring in the northeastern corner of the county. Mr. Kalmbach records crow roosts in eleven counties in Kansas, but does not include Sumner County, where the above mentioned roost has been recently established in the locust grove.

In the Oklahoma bulletin it was estimated that the crow cost the state between $1,200,000 and $1,424,000 during the winter of 1918. This estimate was made largely on the basis of grain consumed or destroyed. No account was taken of the injury to the pecan crop, which, as has been pointed out above, may amount to as much as a thousand dollars per year in a single pecan grove. If the crows should turn their attention to the large paper-shelled pecans grown extensively in the south, the monetary loss would be enormous.

Friends of the crow have often maintained that any grain, other than waste, which the crows get is secured due to the farmer's carelessness. The writer, however, is not able to concur in this opinion. He distinctly recalls a forty-acre field of

milo-maize which was completely stripped by the crows during a time when the weather was too wet for harvesting or even pasturing the crop. He has also seen standing corn, as well as that in the shock, taken by the crows.

Another very important economic problem in connection with the abundance of crows is the effect upon other bird life of the community. Much has been written about this subject, and while it is not the purpose of this paper to discuss the question, attention is invited to the fact that in this locality the crow has certainly become numerous enough to modify the balance of nature. Not only do the crows get many eggs and young of our game and other birds but they consume a great deal of the food needed by these species. Mr. Joseph Kalbfus, secretary to the Pennsylvania Game Commission, has said that the destroyers of our game, song, and insectivorous birds include wild cats, house cats, foxes, weasels, skunks, mink, common rats, owls, crows, blue jays, and blackbirds. The investigations of the Game Commission indicate that the crow belongs at the head of this list. Evidently the crow presents a big problem in connection with the conservation of wild life. That the wild life of our country should be conserved, along with other natural resources, goes without saying. Mr. Hornaday has said, "If game birds and game quadrupeds had been properly conserved they would now be yielding ten million dollars worth of food annually." The food value of these animals is not the only consideration, for they are also of aesthetic, educational, and recreational value. It has been estimated that the residents of Kansas carry ten million dollars out of the state every year while on the mad scramble to find hunting, shooting, and other recreational sports. The State Fish and Game Department is doing all in its power to provide suitable recreational facilities within the confines of the state, and during the past year distributed 280,000 young fish, 5,714 bob-whites, 288 Chinese ring-necked pheasants and 206 imported Hungarian partridges. What effect will the presence of thousands upon thousands of crows have upon these birds? The writer fears for the quail, pheasants, and partridges when they have to compete with the horde of hardy, omnivorous, and predatory crows.

A NIGHTHAWK'S ROOSTING PLACE

BY THOMAS MASON EARL

It is my purpose in this sketch to describe a nighthawk's roosting place which came under my observation for five successive years, a very humble spot for a domicile, to which, no doubt, this particular bird was as much attached as any one, beast or human, could be to more elaborate quarters. The story I wish to narrate is a simple one, but withal so full of food for thought, that readers may well give it more than a passing perusal.

One fine summer morning in July in the year of our Lord 1915, I had arisen just about the time the golden sun in the east was reddening the horizon. Stepping to the door to get a breath of the pure morning air, I heard the "peent" of a couple of nighthawks about overhead. Looking up to obtain a sight of the birds, I was surprised to see one of them dart headlong down and alight on the bough of an elm tree that grew not more than twenty feet from where I was standing. The other bird continued on its overhead journey, whither I knew not. The descending bird, I thought, had come down to rest. So it had, but the rest was to continue all day until the sun had run its course across the heavens and was bidding adieu to the immediate landscape amid the rosy blushes of the west.

Many times during that day my eyes wandered to the half-rotten bough which the nighthawk, evidently a female, had selected for sleeping quarters. The bough was some forty feet from the ground and projected directly outward over the street. It was unprotected by foliage from the sun or rain. The bird perched or rather squatted lengthwise of the limb, according to nighthawk fashion, and faced outwards from the trunk of the tree. Had I not seen the bird alight, it is quite probable I would not have noticed it at all, so much did it appear like a knot or "bump on a log" and so motionless that one's eye would have passed it by as a natural excrescence. Punctually at sunset it flew away to join its companions in an evening quest for such food as might be found invading the twilight atmosphere.

You may be sure I was anxious to know whether its roost had been but transiently selected, or that it was indeed "home, sweet home," to this strange bird of the dusk. Day after day, however, the nighthawk occupied the same spot, never deviating apparently an inch in its slumbering place.

Right here I must state that our street was being repaired that summer and part of the time a steam shovel and half a hundred men were working directly under the bird's bedroom, making all the uncanny clangor that such work calls into being, but the nighthawk paid no more attention to the noise than though it had been the whistling of a wren in a sylvan glade. Much rain fell too, and sudden storms broke the serenity of nature, but nothing daunted, the bird shook its wings sometimes of the water and crouched again for further slumber. On several occasions sudden heavy squalls lifted the goatsucker from its bed and blew it, I know not where, but it was always back the next morning, smiling and happy just as though nothing had happened.

As the fall approached I knew the time was near when my little sister of the air would bid adieu to the scenes of her summer sojourn, and with others of her kind would set out upon a long journey southward. The opportunity was open to me to learn the very date of a nighthawk's leave-taking, as migration records of this bird had not been fully determined. I wished sometimes I could have struck up a mutual friendship with the little minx that had made her summer home so near and yet so far from me. But if she really ever noticed me giving her more than ordinary attention, she had never indicated that there was any reciprocal feeling of interest. No doubt she regarded all earth-walkers as worms of the dust, far inferior to her own kind that could mount like spirits to the vault of heaven.

On the fourth day of September she had a companion, a large male nighthawk that passed the day on the same bough, some two feet further out. One bird paid no attention to the other,—seemingly oblivious of each other's presence. The newcomer left his perch about half an hour before sunset without even a husky "goodbye" to the little owner of the ranch whose hospitality he had shared for the day. I concluded that his presence was quite incidental, that he was probably on his migration from some point farther north. He did not return the following day, but the little nighthawk was in her accustomed place on the fifth and on the sixth, always leaving the perch at sunset. On the seventh she was gone, and repeated search failed to discover any further traces of her that fall. The weather was mild, so she was not forced to leave on account of stormy conditions, but in her little heart she knew the fullness of time had

come to depart. Would she return in the spring? Would she find her way back to the old elm after a journey of a thousand miles or more over mountains and valleys to the land of her winter sojourn? I was anxious to know, and was eager for the time to come when I knew her return could be looked for with others of her kind.

The first week of May came; other nighthawks were in evidence, but the one for which I was looking had not arrived. The second week of May passed, still the home on the bough had no tenant. It was a mere notion on my part that the bird would return, and as the time now seemed past for her vernal arrival, I grew disinterested and gave over watching. One day, however, in the last week of May I chanced to look up at the old elm bough, and there sat my nighthawk in the very spot where I had last seen her in the fall. Unfortunately I was unable to tell the exact time she returned to her old domicile, but thereafter for the balance of the summer she never missed a day from her accustomed roosting place. When September came she was in evidence until the evening of the eighth (1916). On the ninth she was gone, no more to appear until the following May. If she ever had any incubation duties, I do not know when she attended to them. I am thinking she was a spinster; she never entertained male company, and perhaps had a poor opinion of the opposite sex anyhow. Who knows but she might have welcomed some Prince Charming to her heart and home, and looked forward to the date when fate would send to her the nighthawk she could love, honor, and obey.

I again watched for her return the following May (1917), but was again in doubt as to when it occurred. When I found her, she was on a bough some six feet below the former one. She had chosen a new site, and during the rest af the summer was sometimes seen in one place, sometimes in the other. She had now two homes, yet in the main the old bough was the favorite one.

The fall proving stormy, the goatsucker left on its migrations about the first of September, reappearing in the following May (1918). There was little deviation in its choice of roosts from the preceding summer, but on one occasion I found her roosting on the facade of a row of flats which stood just back of the big elm.

In 1919 the roosting was very irregular; a number of days at

intervals the bird was not seen, but occasionally the old roost was occupied. The fall migrations were started in all of the years the bird was observed, before the ninth of September. In the summer of 1920 the little goatsucker did not return so far as I was able to discern. Had it met with mishap on its long journey — fallen prey perhaps to some hawk, or shot down by some fowler? Or had it fallen in at last with her Prince Charming and gone off with him to an equally humble domicile on the top of some city building, there to deposit her two speckled eggs from which would eventually come a progeny of baby nighthawks.

How remarkable it seems that the love of home is so strong in a bird's heart that it will return year after year to the very spot which has become endeared to it. But even more remarkable is the instinct implanted in its little brain to return without deviation to its former abode, and without an apparent effort in determining its proper course over hills and valleys, forests and streams. As Bryant says of the waterfowl:

"There is a Power whose care
Guideth thy way along the pathless coast,
The desert and illimitable air,
Lone wandering but not lost."

THE PHILOSOPHY OF BIRDS' NESTS AND COMPARATIVE CALOLOGY IN CONSIDERATION OF SOME LOCAL NIDICOLUS BIRDS

FRANK L. BURNS

(Continued from September, 1924, Bulletin)

(9) Among the Passerine birds, such species as the Horned Lark, Bobolink, Ipswich and Lark Sparrows, Ground Warblers and Pipits are natural walkers and ordinarily build countersunk nests (i.e., hollows scratched in the earth or leaves).

The Lark Sparrow and Towhee occasionally nest in bushes. The Cowbird is also a walker and this may account for its preference for ground or near ground nests in which to drop its eggs.

Reference has been made elsewhere to the atavistic tendency of the Starling to nest upon the ground in some localities. The Starling is a walker. The Brown Thrasher and Robin are

both hoppers and runners, and both occasionally build a countersunk nest, though normally arboreal nesters.

The Black and White Warbler lines its nest with black rootlets and horsehairs, while the nearby Worm-eater may have its nest in much the same situation but does not have the same beat in feeding habits; lines its nest with the characteristic reddish flower stems of the hair moss. This species shows a remarkable love for its chosen haunts, though it will desert burnt over or poultry infested areas; an undisturbed carpet of forest leaves being essential to its existence. Probably no other bird in this section is more independent of civilization. Rarely even a horsehair is found in its nest and in more than 100 nests examined the lining was as above described.

This bird always removes the leaves from the site, sometimes scratching a slight hollow in the mound and the partly decayed-leaf nest is sunk to the rim, protected by the leaf drift above, if built on the side of a ravine, in appearance a miniature cave.

The Oven-birds' nest is usually domed, the substructure sunken in the carpet of leaves to the level of the lower edge of the entrance. The manner of construction varies little from that of the ordinary bird architecture. The outer framework of the superstructure is bent over and continued around the nest proper from the interior. I have observed the first frail straws of the tumbling weed erected by 11 a. m. and the whole edifice completed in two days.

It is noteworthy that so many nests of this type are frequently covered; those of the Junco, Water-Thrush, Black and White, Worm-eating and Kirtlands' Warblers, naturally by means of the site, and the Meadowlark, Grasshopper and Bachmans' Sparrows and Oven-bird, arched or domed by the exertions of the birds themselves. The Meadowlark pulls down and entangles the tops of the meadow grass above its nest and sometimes raises a covered way or grass tunnel some two or three feet from its nest probably by lowering its head and skulking.

Hopping is a natural mode of progression of the arboreal birds, but an unsatisfactory form of locomotion on the ground, hence it may be argued that ground nesting and feeding of this type must have continued a long time to produce walkers, and that the same habits of the Vultures, Marsh Hawk, Burrowing Owl and Flicker, would indicate a comparative recent date.

(10) In the Blue-winged, Golden-winged, Nashville, Kentucky and Mourning Warblers and the Maryland Yellow-throat, we have species a little less terrestrial perhaps than the average confirmed ground nester and more given to bush hopping. All of these species are accustomed to raise their nests ever so little above the ground and to build a more bulky and more or less loose nest in which forest leaves form the base. For want of a better designation I shall call this the husk type.

Of this the nest of the Blue-wing is typical, of broad blades of coarse tussock grass, clean dead forest leaves pointing upward and inward, occasionally coarse strips of wild grape-vine bark, forming a deep cup-like nest in which the bird's head and tail almost meet over its back; lined with shreds of the same bark, finest on top, and laid across instead of bent in a circle.

The golden gleam of the Kentucky Warbler as it threads its dainty way midst the luxurient swamp vegetation, coupled with its full, musical whistle, so unlike that of any other of our local Warblers, impresses one of its Southern origin.

Neither Bartram, Barton, Wilson, nor Audubon met with it in all this region where in the past 50 years it has become so abundant. In its recent extension of range did it push up along the Atlantic coast or infilterate through the mountain passes from the Mississippi? There seems to be little geographical variation in the composition of its nest. It builds a rather bulky nest of somewhat ragged forest leaves, usually followed by an inner shell of bright, clean leaves, lined with black rootlets. I have observed a bird in the female plumage singing as lustily as the male.

The Maryland Yellow-throat is most at home near an oozy bog, though it sometimes haunts the cool borders of an upland thicket. In the former situation the cornucopia-like nest is usually a few inches above the mud in a clump of boneset, gentian, goldenrod or swamp grass. The cornucopia shape is inevitable in all instances where a tall plant growth is selected. The first layer of coarse swamp grass and weed stems pushed between the close standing stems forms the mould of an inverted cone. A less common type is a rather flat basket affair built and lined with grass and is always built in meadow grass which affords no support for the usual type. A male frequenting my berry patch for three summers always sang: "Fred! Where's sister? Where's sister?"

(11) The arched or domed nest effected by many of the smaller terrestial birds for the purpose of concealment may not be a very high type, but the domed or gobular nest of the rather low-ranging tree-hoppers doubtless expresses the higher type of the essentially ground-feeding species, and the facility with which some of its builders turn to cavity nesting shows that this type is more closely connected with the latter than the pensile type.

The Magpie of Europe and America builds a large, gobular nest of coarse sticks in tree or bush, plastering it well up the sides with mud and lining it with rootlets, grasses, bark, hair, or pine needles. The House Sparrow only occasionally builds its bulky nest of trash on the branches of trees, for it is a backslider, preferring cavities or covered sites. The nest, however, even if only consisting of the ordinary hen feather lining, generally conforms to the domed type. It is a most virile species. I shot a newly mated male daily for a week in order to prevent a single female from nesting in a Martin's box, and only succeeded at last by killing the much-mated female.

The House and Bewick's Wrens also have yielded to the lure of cavity or sheltered nesting, though often retaining the domed feature.

The Marsh Wrens build a round ball of rushes or grasses, with side entrance, some three or four feet above the water, fastened to the growing reeds, and line it with cattail and willow bloom, or fine grasses, sometimes feathers.

(12) The mason-birds according to some European authorities moisten the earth with saliva to make it adhesive. While it is probable that the gobs of mud receive more or less tempering in the mouth of the builder, yet the small amount of saliva employed carries much viscosity.

The *genera Sayornis* contain notable masons while retaining something of the felt-making habits of some of the Flycatchers. The Phoebe builds a mud nest with an admixture of grasses or mosses, occasionally black rootlets; lined with hair, bristles, cotton, thistledown or plant fibre.

In the writer's own time the Phœbe has spread out from the spring-houses and wooden bridges to the railroad culverts in the Chester valley. Porch plates, deserted buildings, quarry shelves and claybanks, also, have largely supplanted the ancestral nest plastered upon the face of the cliff.

The shape and construction varies according to position: if

attached to the side of an overhanging rock it is semicircular and mainly composed of mud pellets mixed with moss; if on a flat beam or post it is more nearly circular and flat, and sometimes little mud is used. Perhaps the most difficult and inexplicable situation noticed was balanced nicely on the edge of a thin board forming the cross brace over a small, roofed reservoir spring. For several previous seasons the nest had been attached to the smooth walls, the birds finding entrance only by means of the slightly ajar door.

Another pair nesting on the plate of the cellar wall of a deserted cabin, where the joists divided it into several compartments; like John Burroughs' Phoebes, these birds seemed unable to relocate the exact site chosen and laid the foundations of several nests, completing and laying in two, exhibiting an inferiority in this respect to the Purple Martin, Domestic Pigeon and perhaps other species nesting in compartments.

Doubtless birds locate their homes by means of familiar objects, and this is also true of other animals. The apiarist finds it advisable to group hives in multiples not exceeding five, with a bush or tree near each group, to give each hive an individuality and prevent the bees from "drifting."

The Magpie exhibits more of the plasterers' skill in the application of mud to its structure, and mud is only incidental to the Jays, which as a rule belong to the brush-making type. Once I discovered several yards of white satin ribbon stolen from the wash, festooned about a Blue Jay's nest in a lilac bush. Contrary to the general description of those who have made only a superficial examination of the Crows' nest, it uses mud binder similar to the European Crow.

The Blackbirds and Grackles use mud in large quantities. The Florida Grackle varies in the incorporation of twigs, Spanish moss and cow manure, or flags, sphagnum moss and pine needles.

The Barn Swallow's domicile is not unlike that of the Phœbe. Formerly a cave or crevice nester, early in the history of Colonial times it became an inhabitant of the great barns, fixing its nest to the interior walls, beams and rafters of the mows, and later excluded from the interior, nesting on the overshoot plates or in open sheds.

Ridgway found its nests in Nevada attached to the ceilings of small caves. Coues observed a small colony in the Northwest occupying little holes and crevasses in the face of a bank, and re-

marks upon its preference in artificial situations for a corner or angle as a modification of the primitive hole-nesting habit.

The Barn or Chimney Swallow (*H. rustica*) of Europe, probably originally nested in rock caves, possibly hollow trees, adapted itself in early times to the wide, old-fashioned chimney and later to the interior of buildings. Its nest is similar to that of our own Barn Swallow. The Phoebe and Barn Swallow secure a very durable nest by mixing mud and straw. I have examined man-made walls of similar composition — clay, chopped straw, and of course stone — in buildings fully 200 years old and can testify as to its durability.

The Cliff Swallow is the master builder of this type. Formerly an inhabitant of the cliff to which it attached its bottle nest of mud or clay, it now selects the exterior walls of a barn or mill and plasters its nest close up under the eaves. Both sexes gather the bits of mud, temper it well by working the jaws and deposit it in pellets to form its peculiar nest in a matter of less than a week's time. It prefers unpainted surfaces and it has been suggested that a scantling nailed up near the eaves will aid it materially, especially on painted boards. Dr. Coues pretends to trace the most elaborate retort-shaped receptacle back through less perfected purse-like structures to a primitive walling up of chinks or crannies on the face of cliffs and in materials employed notes the progressive steps from a mere deposit of soft material in a hollow to the projected walls beyond the base of support.

The Wood Thrush builds in a crotch or out on a limb of a forest tree at an average height of eight feet. The female works in the early morning, completing in about five days. A layer of damp leaves, then a layer of mud, weed stalks, grasses or bark strips, occasionally some twigs; lined generally with dark rootlets. This species as yet has been little affected by civilization and in consequence has revealed little versatility.

The Robin ranges from the ground to 30 feet in fruit or shade trees and frequently nests on porch plates, window sills, sheds and open boxes. The female does practically all of the work with mud and grasses; the male sometimes offers to help her with a straw which she is very apt to reject, and it is a pretty sight to see her standing in the partly finished nest all aquiver, moulding the structure by breast pressure and partly raised wings as she whirls like an animated potter's wheel. I

have observed an individual make 21 trips for material in two hours and complete the nest in three days.

The Robin is proverbially among the most intelligent of birds, yet it is so much the creature of instinct that when it has barely completed a nesting cycle and commenced a new, it will sometimes thrust in the open mouth of a clamorous fledgling a bit of grass gathered for the new nest; the cry of the young momentarily aroused the feeding instinct and the parent behaved like a very absentminded person.

(13) The Red-winged Blackbird builds an interlaced basket in clumps of reeds or rushes, or occasionally in forks of bushes; composed of coarse grasses and bark strips, lined with fine grass.

The Chestnut-sided Warbler is rather more of a fibre-felter of superior workmanship without getting the same result as the vegetable felter, since the felting is on the exterior only. I have found here only two nests, one in a wild huckleberry and the other in a blackberry bush. The nest is made of stalks and fibre of the silverleaf, lined with split strips of same and some horse hairs. The Tennessee, Myrtle, Bay-breasted, Magnolia and Prairie Warblers build a similar nest near the ground.

A law governing the elevation of the nesting site has been offered by Averill, in which birds with long pointed wings may nest high or low, but the short and round winged are low nesting, seems to bear the test in most instances.

(14) The pendant basket felters include all of the Vireos as typical arboreal feeders. Our four local species all build pensile nests of similar construction, deep-cupped and slightly contracted at rim. The Red-eye is by far the most abundant, generally building in the terminal fork of a long branch, 3 to 10, sometimes 30 feet up. The nest is of fine strips of the inner bark of oak or chestnut, and of wild grape-vine bark, sometimes a few forest leaves; studded externally with bits of paper from hornets' nests, bleached and punky wood, plant fibre, pieces of dead leaves or egg cases of the geometrical spider, secured with spiders' silk, lined with finer shreds of grape-vine bark, occasionally fine stems of the tumbling grass; the whole interwoven and compressed into a usually thin, compact shell remarkably inconspicuous in nesting time and durable enough to withstand the weather for two years. I found one nest in the yard lined with white hen feathers. The Yellow-throat in some localities studs its nest with lichen, though I have not found it so here;

and the White-eye makes use of more paper, both of hornets' and man's manufacture, than the "Preacherbird," which led Wilson to dub it the "Politician," and it supplies a grass lining a little more frequently.

The Warbling Vireo nests in old maples about homes, averaging considerably higher and uses a greater quantity of grasses.

The Vireo group is consistant in the hanging nest; some species vary according to locality in the more or less fibre, or in materials like birch bark, pine needles or horsehair. It has been asserted that the male carries the material for the female to arrange and that the nest is complete in three days.

The local Acadian Flycatcher, now so scarce, builds a frail semi-pensile nest of fine grass and weed stems, occasionally bark strips, hickory and black oak blossoms, maple blossom stems and bark fibre, bound with spiders' silk; a small, conspicuous, semi-transparent cup with loose ends hanging down untidy; lined with fine grasses or blossoms, and placed in the forks of a beech sapling, 8 - 10 feet. In Hardin County, Iowa, the nest is made of the vetching vine interwoven with a few grasses and oak catkins. It is evident that this species has not thoroughly learned the art of pendant nestbuilding.

Bendire describes three types of nests, the first and most common decorated with male aments of different forest trees; second, in which these blossoms are dispensed with, and last where the nest is built entirely or in large part of different kinds of tree moss.

(15) The nest of the Baltimore Oriole has been rightly considered one of the most ingenious examples of North American bird architecture, not only because of the lines of beauty in its deeply-pouched and pendulous structure and its exposition of the natural art of weaving, crude though it be in comparison to the handicraft of man; but also because of the difficulties overcome in the adjustment of the pliable fibre to meet the strain incident to a partial overhead attachment and the whipping of the bough.

The nest is placed near the extremity of slender branches of the sycamore, walnut, willow, maple or apple trees, mostly 20 to 40 feet up in practically inaccessible situations, though one was found only five feet above the ground.

Sometimes the structure is suspended by the rim between

forked branches; others may be attached to some twigs extending part way down the side, but the rim partly or wholly unsupported.

A nest of superior workmanship, taken in 1921, was supported in the rear by two contiguous branchlets, to which it was attached by loops of twine and horsehair, the rim unsupported. The material is almost entirely of long black horsehairs, with a few strands of cotton twine and silvery-white vegetable fibre.

The pre-colonial nest was doubtless composed of the fibrous bark of decayed native plants, which in this section gave place in Wilson's time to flax, hemp, tow, hair, and wool, partly felted and partly interwoven into a kind of cloth, sewed through and through with long horsehairs; much better material on the whole than now available, since the average nest is of bark fibre of dead plants like the milkweed, silverleaf, poke, nettle, etc., together with cotton, worsted and silk twine—black, white, red, yellow, and blue—and the diminishing supply of horsehair. String is of course a comparatively new and somewhat refractory substance productive of snarls and unsightly entanglements. The nest is lined variously with shreds of grapevine bark, split grass stems or horsehairs.

The color of the exterior is of little moment though experiments have demonstrated that the bird is not color blind. Many of our older ornithologists seemed to foster the belief that the best constructed nests are the result of older and more experienced birds, an observation very important if true. The male sometimes carries material and makes a show of helping, but the female is the real builder and usually completes the nest in a week.

The nest of the Bullocks resembles that of the Baltimore Oriole, but as a rule is less pensile. Audubon's, Scott's, Hooded, and Arizona Hooded more nearly approach that of the Orchard; all containing green, wire-like grass, dry fibre of the yucca or the like.

The semi-spherical, green wire-grass cradle of the Orchard Oriole swings from the boughs of the apple, pear, or willow at a lower level than that of its more brilliantly plumaged relative, and surpasses it in pristine beauty, if not in the ingenuity displayed in overcoming the numerous engineering difficulties. Scarcely two situations are exactly alike, ranging from the horizontal crotch in which the nest is supported from the bot-

tom, to the twig-encrusted fork in which the nest swings free from its hammock-like lashings at the rim.

Wilson remarked that when it is located in the long pendant branches of the weeping willow, the nest is made much deeper and of slighter texture, the circumference is marked by a number of these pensile withes that descend on each side like ribs, supporting the whole. These branches being sometimes 12 or even 15 feet long, have a long sweep in the wind and render the first of these precautions necessary. This Oriole disdains the refuse of civilization, for it plucks from the living grass the long flexible stems to build its stout walls and to knit and sew in a most substantial manner until the texture is similar to that of a grass mat. It is lined with feathers, thistle down, or according to Wilson, the down from the seed of the sycamore. In the South it is said to be less bulky and occasionally of gray tree moss, lined however with the green wire-grass so frequently found elsewhere in the body of the nest. Both sexes assist and complete in three or four days.

The Baya Weaverbird fabricates a nest of uniformly interwoven tendrels or fibrous roots, starting with a solidly-woven rope, opening into a gobular chamber and contracting to a perpendicular entrance tube, and an Indian Tailorbird unites two growing leaves by stitching the edges together with fibre to form a pocket for its nest.

Conclusion: It is not to be expected that the constructive work of our birds would agree in more than a general way with any system devised for classification, but it should reveal something of phylogenesis, the origin or ancestry of the various groups.

It may be assumed that the nests assembled under the heads of earth and rock cavities, earth burrow and platform (part), probably represent early or original terrestrial types. The platform (Pigeons and Raptores), agglutinated (Swifts), felted (Hummingbirds), were probably early cliff dwellers, though the assumption that the latter originated in the vast rock piles of Tropical America may not be well founded. The Woodpeckers may belong to this division also, though the evidence favors the arboreal, to which evidently belong all other types described here; the countersunk nest especially being a departure from the arboreal habit.

It will be observed that while much is to be learned of the

domestic economy of all species, it is evident that there is a similarity in position and composition of nests according to families, especially of the lower orders. Progressive upward there appears an increasingly great deviation in position, construction, composition, and architecture of nests. In the great families of Flycatchers, Sparrows and Warblers, especially, great diversity exists, though the species of a genera are very apt to construct similar, and subspecies, indistinguishable nests taking into consideration individual and geographical variations. Species associated in colonies with the same environmental conditions naturally conform to a certain standard, while solitary species seem to develop more individuality in the local sense.

Civilization is responsible for changes in the nesting habits of many of our birds, while others have not been affected appreciably. It is not the love of civilization that has induced so many birds, especially those building open nests, to breed near the abode of man, but the quite natural desire to escape better-known or more feared enemies. It is a misfortune that we have no account of the nesting habits of a number of our birds most affected by the settlement of the country, before the change was practically effected. It must be remembered that this part of the country had been cultivated a century and more before Alexander Wilson and John Audubon attempted the biographies of our most familiar birds.

When the first settlers leveled the great forest and the Chimney Swift lost its ancestral home, the change in its domestic economy must have been as abrupt as it was obligatory. The transformation of the nesting habits of the Barn and Cliff Swallows was probably more gradual and agreeable, since the species must have been very local and restricted to the few available nesting sites. It is strange that although many individuals of several species of the natural cavity sort early adopted man-made substitutes, only one other species, the Purple Martin, has entirely forsaken its natural nesting site.

The great West is most fortunate in having intimate studies of many species and subspecies before civilization effaced so many of the natural harbors. Awaiting the inevitable changes of the breeding habits of Vaux's Swift, Western Martin and other species to conform with changes long since made by allied Eeastern species, we may expect further adaptations in our local birds, especially the Osprey, Swallow, Creeper, and the like,

identical or only subspecifically distinct from the European, to demonstrate that great versatility is the common heritage of domestic as well as foreign birds.

In America the Osprey can afford to colonize as its food is yet unlimited. In the West it sometimes places its nest on rock spires, but nowhere has it been compelled to seek a site upon disused chimneys or ruined walls, such as the European form sometimes adopts. The European form of the Brown Creeper, also greatly surpasses the American form in nesting adaptability.

There recently appeared in a popular bird magazine an apparently authentic record of a Hermit Thrush building upon a porch plate, the first instance known to the writer of this wood-loving species departing from type. We know positively that 300 years ago there was not a single Robin in Pennsylvania to thus situate its nest because there were no buildings. The earlier ornithologists of a century past regarded a departure from the tree site very unusual; yet a goodly number now build yearly in all available building sites; in fact it has become so common that a pseudo ornithologist once informed the writer that he was confident that we had two kinds locally, the "House" and the "Field" Robin, because they built entirely different nests.

No doubt the tops of hollow trees and the Colonial chimneys had something in common from the viewpoint of the Swift. Certainly the Robin does not mistake the dressed and painted building timbers for the natural limb.

I cannot see that the use of the bill as a building tool greatly handicaps the bird in building, but on the contrary, I believe that the eye at the base of the tool itself is a great convenience to the bird in building as well as in feeding.

The size, shape and structure of the bill correlates with the food habits and with the exception of such groups of the Woodpeckers, bears little or no relation to the character of the nest. Examples are common enough of the great diversity in working tools productive of similar results: the Puffin, Kingfisher and Bank Swallow are equally expert burrowers; the Heron, Eagle and Cuckoo all produce the platform type; the needle-like bill of the Hummingbird, the flat bill of the Western Wood Pewee and the short conical bill of the Goldfinch, regularly manufacture the felted nest; the Broad-bill, a rather primitive type of the Passerine order, found in the Indian region, is said to construct a pendulous nest not inferior to that of the Oriole. The Hum-

mingbird, Gnatcatcher and Wood Pewee with very unlike bills, manage to thatch their nests with tiny bits of lichen very satisfactorily.

It is evident even in the inadequate descriptions of the nests of a single locality that the birds as a class display a wide range of constructive ability; many are as primitive as that of the reptiles; others more elaborate than the best quarters of the mammals and comparable only to the wonder-work of the inferior class of insects. It is constantly assumed in this paper that ground, earth and rock cavity- nesting is usually the most primitive, and that earth burrow, felted, woodhewn, and agglutinated types are in most instances more closely correlated with the first forms than with the cupped brush, its variations, and the pendant and woven types; though the arboreal platform may be in some instances a modification of the extraneous materials or lining of a ground or burrowing nest, and in other instances the primitive type of the arboreal nester which in all probability never built upon the ground.

It would appear from numerous instances given that the nesting cycle is not the result of individual reason but largely of purely instinctive impulses in orderly sequence leading logically from one to another until the cycle is broken or runs its entire course. Many though not all, apparently eccentric or inexplicable actions during the nesting time become clear if this is kept in mind.

Perhaps the reasons already advanced for nest-building seem inadequate when applied to the male and it may well be that his part is performed with no other object in view than to be near his mate.

The rather dogmatic generalizations of Conklin, who learnedly remarks that instincts are complex reflexes, which like structures of an organism, have been built up, both ontogenetically and phylogenetically, under stress of the elimination of the unfit, so that they are usually adaptive; is comprehensive.

Adaptability (flexibility or plasticity, as some prefer to write it) as applied to the nesting habits of so many of our birds is an established fact, yet no one who has studied the living bird intimately is in a position to deny the consciousness of the individual, since it has, as Finn points out, much the same faculties for acquiring knowledge as ourselves.

WINTER BIRDS IN EASTERN ARKANSAS

DR. L. OTLEY PINDAR

(Foreword)

(May I make a short preliminary statement to those who may read this paper, and others which, I hope, will follow it?)

I commenced my ornithological work, study, observation, taking notes, writing and, for a short while, collecting, early in 1884.

In October, 1889, I entered medical college and my ornithological activities were restricted. Then, the establishing myself in practice and many other things continued to interfere and it is only in the past year or so I have been able to resume anything like systematic work. During all the time, however, my interest continued unabated and I kept notes with more or less regularity and had opportunity to cover quite a scope of country, much of it little known ornithologically. I am now totally disabled as far as any active work is concerned and I purpose (D. v.) devoting my time to the arrangement and dissemination of the facts I have been able to gather in the past years.

One thing I feel should be made clear, in fairness both to the reader and myself: in addition to the notebooks in which daily entries were made (of course there were lapses and intervals in which none were made), I had other books in which were set down in more condensed form the principal facts in regard to each species or locality, a sort of ledger, so to speak. During my service in the M. C. U. S. A. (World War), my wife accompanying me nearly all of the time, our household goods, temporarily in storage, were destroyed by fire. My desk and a combination desk and bookcase were about the only things saved. In these were my "ledgers," as I have referred to them. The "day books," to continue the comparison, were lost. The consequence, as to my written work, can be readily seen. The basic facts are there and I know them to be accurate and positive, as probabilities, speculations and doubtful identifications were not entered in the books preserved, but the details, minutiae, in many cases the exact dates, etc., are gone, and if this is not known and taken into consideration my articles might appear careless and inacurate.)

This paper is based upon notes taken during two visits to

Arkansas, Oct. 23rd–Nov. 10th, 1888, and a few days in January, all of February and a short time in March, 1889.

On my first trip I made headquarters at Helena, Phillips County, reaching there by river from Memphis, Tenn., taking walks and drives over the surrounding territory, which is mostly low land except for some hills to the north-west, nearly all the above being well wooded, and quite an extensive area of prairie land beginning thirty miles west and lying between Helena and Pine Bluff.

On the second visit I was the guest of the Superintendent at a sawmill camp several miles from Marked Tree, Poinsett County, in the valley of the St. Francis river and not far from the "Sunk Lands," a depression believed to have been caused by the same earthquake that made Reelfoot Lake in Northwestern Tennessee.

The country is low, swampy, full of little lakes, sloughs and bayous, heavily timbered with cypress, sweet gum and sycamore and subject to overflow by the Mississippi river every year and often twice a year.

On slightly higher grounds, farther back from the river, are found white oak, hickory and thick cane brakes.

Black bear, deer, wild cat, beaver, otter, mink, muskrat, raccoon, opossum, squirrels and rabbits were plentiful, and snakes of several varieties, including the "cotton-mouth" moccasin were seemingly the most abundant form of life.

A list of the birds found and identified during these visits follows. Where Helena is not specified the notation refers to Poinsett County:

1. Holboell's Grebe—*Colymbus holboellii.*
   Rare.
2. Horned Grebe—*Colymbus auritus.*
   Fairly common.
3. Eared Grebe—*Colymbus nigricollis californicus.*
   Very rare.
4. Pied-billed Grebe—*Podilymbus podiceps.*
   Common.
5. Loon—*Gavia immer.*
   Rare.
6. Red-throated Loon—*Gavia stellata.*
   Very rare. Found only in the "Sunk Lands."
7. Herring Gull—*Larus argentatus.*
   Common on the Mississippi river at and near Helena.
8. Ring-billed Gull—*Larus delawarensis.*

9. Bonaparte's Gull—*Larus philadelphia.*
Rare. Only seen at Helena.
10. Water-Turkey—*Anhinga anhinga.*
Rare; becoming more common towards the first of March.
11. Double-crested Cormorant—*Phalacrocorax auritus auritus.*
Fairly common.
12. White Pelican—*Pelecanus erythrorhynchos.*
Rather common.
13. Red-breasted Merganser—*Mergus serrator.*
Common.
14. Hooded Merganser—*Lophodytes cucullatus.*
Rare.
15. Mallard—*Anas platyrhynchos.*
Abundant. Common at Helena.
16. Black Duck—*Anas rubripes.*
Fairly common.
17. Gadwall—*Chaulelasmus streperus.*
Fairly common.
18. Green-winged Teal—*Nettion carolinense.*
Common.
19. Blue-winged Teal—*Querquedula discors.*
Common.
20. Pintail—*Dafila acuta.*
Common.
21. Wood Duck—*Aix sponsa.*
Common.
22. Lesser Scaup Duck—*Marila affinis.*
Common. Other ducks than the Mallard were also seen at Helena, but not at a range that made positive identification possible.
23. Canada Goose—*Branta canadensis canadensis.*
Common. Same at Helena.
24. Brant—*Branta bernicla glaucogastra.*
Fairly common. A few at Helena.
25. Whistling Swan—*Olor columbianus.*
Some twelve or fifteen in the Sunk Lands.
26. Trumpeter Swan—*Olor buccinator.*
Very rare, and only in the Sunk Lands.
27. Bittern—*Botarus lentiginosus.*
Rare.
28. Least Bittern—*Ardetta exilis.*
Rare.
29. Great Blue Heron—*Ardea herodias herodias.*
Rather common. Several noted near Helena.
30. Egret—*Herodias egretta.*
Fairly common.
31. Snowy Egret—*Egretta candidissima candidissima.*
Rare. Two were seen on the Arkansas side of the Mississippi river, about twenty miles below Memphis, Oct. 23rd.
32. Little Blue Heron—*Florida caerulea.*
Common.

33. Green Heron—*Butorides virescens virescens.*
Common.
34. Black-crowned Night Heron—*Nycticorax nycticorax naevius.*
Rare.
35. Whooping Crane—*Grus americana.*
Very rare, and only in the Sunk Lands.
36. Sandhill Crane—*Grus mexicana.*
Rather common latter part of February and first of March.
37. Virginia Rail—*Rallus virginianus.*
Fairly common.
38. Florida Gallinule—*Gallinula galatea.*
Common.
39. Coot—*Fulica americana.*
Rare.
40. Woodcock—*Philohela minor.*
Very rare.
41. Wilson's Snipe—*Gallinago delicata.*
Rare in Poinsett County except during a few days about the first of March. Common around Helena. While I was there one hunter brought in a bag of eighteen.
42. Pectoral Sandpiper—*Pisobia maculata.*
Rare.
43. Least Sandpiper—*Pisobia minutilla.*
Fairly common.
44. Spotted Sandpiper—*Actitis macularia.*
Common.
45. Killdeer—*Oxyechus vociferus.*
Fairly common.
46. Bob-white—*Colinus virginianus virginianus.*
Rare in Poinsett County. Abundant around Helena.
47. Ruffed Grouse—*Bonasa umbellus umbellus.*
Rare in Phillips County. Said to have formerly been common. Not found in Poinsett.
48. Prairie Chicken—*Tympanuchus americanus americanus.*
Common on the prairie lands between Helena and Pine Bluff. Not found elsewhere.
49. Wild Turkey—*Meleagris gallopavo silvestris.*
Common. Fairly common in Phillips County.
50. Passenger Pigeon—*Ectopistes migratorius.*
Common.
51. Mourning Dove—*Zenaidura macroura carolinensis.*
Rare in Poinsett County. Fairly common in Phillips.
52. Turkey Vulture—*Cathartes aura septentrionalis.*
Common. Same at Helena.
53. Black Vulture—*Catharista urubu.*
Common. Same at Helena.
54. Marsh Hawk—*Circus hudsonius.*
Rare.
55. Sharp-shinned Hawk—*Accipiter velox.*
Rare.

56. Red-tailed Hawk—*Buteo borealis borealis.*
Common.
57. Red-shouldered Hawk—*Buteo lineatus.*
Not quite so common as the preceding.
58. Swainson's Hawk—*Buteo swainsoni.*
Still less common than the preceding.
59. Broad-winged Hawk—*Buteo platypterus.*
Fairly common.
60. Rough-legged Hawk—*Archibuteo lagopus sancti-johannis.*
Rare.
61. Bald Eagle—*Haliaetus leucocephalus leucocephalus.*
Not uncommon in either of the counties visited. A magnificent adult male was killed about two miles north of Helena and brought into town while I was there.
62. Pigeon Hawk—*Falco columbarius columbarius.*
Rare.
63. Sparrow Hawk—*Falco sparverius sparverius.*
Fairly common. Common in Phillips County.
64. Short-eared Owl—*Asio flammeus.*
Rare.
65. Barred Owl—*Strix varia varia.*
Common.
66. Screech Owl—*Otus asio asio.*
Common in both counties visited.
67. Great Horned Owl—*Bubo virginianus virginianus.*
Fairly common.
68. Belted Kingfisher—*Ceryle alcyon.*
Rare.
69. Ivory-billed Woodpecker—*Campephilus principalis.*
A fine male was frequently seen in a low, wet, heavily wooded strip about two miles from the camp. This was presumably the same bird as it was always seen in the same place, a territory approximately one-half by one-quarter mile in area. On one occasion a female was seen in the same section and they were probably mates, although they were not seen together or even on the same day.
70. Southern Hairy Woodpecker—*Dryobates villosus audubonl.*
Rare.
71. Downy (?) Woodpecker—*Dryobates pubescens ?.*
Common. Probably the Southern. They were not differentiated at the time these notes were made.
72. Yellow-bellied Sapsucker—*Sphyrapicus varius varius.*
Rather common.
73. Pileated Woodpecker—*Phlocotomus pileatus pileatus.*
Common.
74. Red-headed Woodpecker—*Melanerpes erythrocephalus.*
Common. Same in Phillips County.
75. Red-bellied Woodpecker—*Centurus carolinus.*
Common. Same in Phillips County.
76. Flicker—*Colaptes auratus auratus.*
Common. Same in Phillips County.

77. NIGHTHAWK—*Chordeiles virginianus virginianus.*
Several seen at Helena the latter part of October. Said to be very common during the spring and fall.

78. BLUE JAY—*Cyanocitta cristata cristata.*
Rare in Poinsett County except in the immediate vicinity of Marked Tree. Common in and near Helena.

79. CROW—*Corvus brachyrhynchos brachyrhynchos.*
Almost rare in Poinsett County. Common in Phillips.

80. FISH CROW—*Corvus ossifragus.*
Rare, and only found along the St. Francis river.

81. RED-WINGED BLACKBIRD—*Agelaius phœniceus phœniceus.*
Rare in Poinsett. Common in Phillips.

82. MEADOWLARK—*Sturnella magna magna.*
Same as above.

83. BRONZED GRACKLE—*Quiscalus quiscula æneus.*
Abundant in both counties.

84. PURPLE FINCH—*Carpodacus purpureus purpureus.*
Rare in the vicinity of Helena. Not seen elsewhere.

85. GOLDFINCH—*Astragalinus tristis tristis.*
Noted only in or near Helena. Common there.

86. VESPER SPARROW—*Poœcetes gramineus gramineus.*
Rare in Poinsett and only near Marked Tree. Common in Helena.

87. HARRIS SPARROW—*Zonotrichia querula.*
Same as above but rather more common.

88. WHITE-CROWNED SPARROW—*Zonotrichia leucophrys leucophrys.*
Only noted at Helena and vicinity, and rare there.

89. WHITE-THROATED SPARROW—*Zonotrichia albicollis.*
Common in Phillips County. Not found in Poinsett.

90. TREE SPARROW—*Spizella monticola monticola.*
Rare and only around Helena.

91. CHIPPING SPARROW—*Spizella passerina passerina.*
Very rare. Phillips County only.

92. FIELD SPARROW—*Spizella pusilla pusilla.*
Rare in Poinsett County. Fairly common in Phillips.

93. SLATE-COLORED JUNCO—*Junco hyemalis hyemalis.*
Fairly common at Helena after the 5th of November.

94. SONG SPARROW—*Melospiza melodia melodia.*
Rare in Poinsett. Common in Phillips.

95. LINCOLN'S SPARROW—*Melospiza lincolni lincolni.*
Fairly common in Phillips. Not found in Poinsett.

96. SWAMP SPARROW—*Melospiza georgiana.*
Rare in Poinsett. Common in Phillips.

97. FOX SPARROW—*Passerella iliaca iliaca.*
Same as the preceding.

98. TOWHEE—*Pipilo erythrophthalmus erythrophthalmus.*
One seen at Helena Oct. 25th.

99. CARDINAL—*Cardinalis cardinalis cardinalis.*
Fairly common in Poinsett. Common in Phillips.

100. WHITE-RUMPED SHRIKE—*Lanius ludovicianus excubitorides.*
Rare.

101. Mockingbird—*Mimus polyglottos polyglottos.*
A few seen near Marked Tree. Common in and near Helena.
102. Carolina Wren—*Thryothorus ludovicianus ludovianus.*
Common, especially in Phillips County.
103. Bewick's Wren—*Thryomanes bewicki bewicki.*
Rare, in both counties.
104. Winter Wren—*Nannus hiemalis hiemalis.*
Fairly common in both counties.
105. Brown Creeper—*Certhia familiaris americana.*
Rather common in both counties.
106. White-breasted Nuthatch—*Sitta carolinensis carolinensis.*
Common in both counties.
107. Red-breasted Nuthatch—*Sitta canadensis.*
Very rare, and only in Poinsett County.
108. Tufted Titmouse—*Bacolophus bicolor.*
Fairly common in Poinsett. Common in Phillips.
109. Carolina Chickadee—*Penthestes carolinensis carolinensis.*
Common in both counties.
110. Golden-crowned Kinglet—*Regulus satrapa satrapa.*
Common in both counties.
111. Hermit Thrush—*Hylocichla guttata pallasi.*
Rare in both counties.
112. Robin—*Planesticus migratorius migratorius.*
Common in both counties.
113. Bluebird—*Sialia sialis sialis.*
Rare in Poinsett. Common in Phillips.
114. English Sparrow—*Passer domesticus.*
A few at Marked Tree.

Versailles, Ky., Aug. 14, 1923.

Introduction re-written and slightly amended, April 30, 1924.

NOTES—HERE AND THERE

Conducted by the Secretary

THE NASHVILLE MEETING

While it will be impossible, because of lack of time and space, to tell of the recent meeting of the W. O. C. at Nashville, Tennessee, it seems advisable to mention briefly some few facts. The meeting of The Wilson Ornithological Club was held jointly on November 28-30 with The Inland Bird-Banding Association, The Kentucky Ornithological Society, The Tennessee Ornithological Society, and The Tennessee Academy of Science. The first two days were devoted to programs, the last one to a field trip under the direction of The Tennessee Ornithological Society. Members were present from West Virginia, Kentucky, Tennessee, Florida, Georgia, Iowa, Texas, Minnesota, Washington, D. C., Michigan, Ohio, Illinois, Indiana. Friday evening was devoted to a banquet at Hotel Hermitage, attended by 51 members. Saturday evening, after the program, the visitors were entertained at the home of Mrs. James C. Bradford, "Woodstock." Officers elected for 1925 were as follows:

President—A. F. Ganier, Nashville, Tennessee.
Vice-President—Thomas H. Whitney, Atlantic, Iowa.
Secretary—Gordon Wilson, Bowling Green, Kentucky.
Treasurer—Ben. J. Blincoe, Dayton, Ohio.
Councillors—
W. M. Rosen, Ogden, Iowa.
Wm. I. Lyon, Waukegan, Illinois.
H. L. Stoddard, Beachton, Georgia.
Lynds Jones, Oberlin, Ohio.

A full account of the meeting will appear in the March Bulletin.

Mr. H. B. Bailey, Newport News, Virginia, listed as an associate member in the September membership list, should have been listed as an active member.

In a recent test, says an item in a Nashville, Tennessee, paper, English Sparrows showed an ability to resist fumes of mustard gas and other deadly chemicals. The experiment was tried to determine what would be the most effective way of getting rid of animal and bird pests.

Mr. G. D. Hibbs, Cox's Creek, Kentucky, says, in a letter to the Secretary: "I have worked with the birds about twenty years, building houses, and watching bird habits. On my place I have about seventy-five drop-hole boxes of different sizes and forms, of which four or five were unoccupied this season on account of Red and Flying Squirrels. The Bluebird is my best tenant, the Tufted Titmouse coming second, the Carolina Chickadee third. I have in my garden and orchard several open and bracket boxes and a few old gourds, which are occupied during the nesting season by Robins, Wood Pewees, Mockingbirds, Blue Jays, Brown Thrashers, and Wrens."

Here is an interesting item from one of our members: "A Crow banded by me, old American Bird Banding Association No. 23021, Tabu-

sinca, New Brunswick, Canada, June 22, 1917, was reported found dead at Paterson, New Jersey, October 21, 1924, by Tice C. Lobbregt. An interesting coincidence is that this bird, banded so far from my home in Demarest, New Jersey, a little more than seven years later had come within twenty miles of that home 'as the crow flies,' to die."—Beecher S. Bowdish.

The annual meeting of the British Association for the Advancement of Science was held at Toronto, Canada, August 6-13. The society hoped by this meeting to tie much more strongly together the scientists of the Old and of the New World.

The Iowa Academy of Science has published several papers by our own Professor Dayton Stoner, formerly Vice-President of the W. O. C. Though a comparatively young man, Professor Stoner has already done much for science in his state and has secured an enviable national reputation for his researches in the Fiji Islands and for his numerous smaller studies.

The London *Morning Advertiser*, of London, Ontario, for November 3, reports that thousands of Swans passed over the city recently in migration, identified by our member, W. E. Saunders. Many of the birds got lost in flying over the city at night and were seen at close range by Mr. Saunders.

Our President, A. F. Ganier, and several of our Tennessee members, George R. Mayfield, P. L. Cobb, A. C. Webb, Mrs. Sanford Duncan, and others, have interested themselves in the project to make a national or state park of the Great Smoky Mountains. Committees from the national government have investigated the location and the Tenneseeans are hopeful about the prospects. A whole sheet of the Sunday edition of The Nashville *Banner* for September 21 was devoted to pictures made by President Ganier and his party in their trip this year to the Great Smokies. A large section of the *Banner* was given to the proposed park and its advantages and beauties.

Mr. William G. Fargo, of Jackson, Michigan, spent the period from August 18 to September 8, 1924, on Isle Royale, Michigan. In a letter to the Secretary he says: "Numbers of Sharp-shinned Hawks were seen after September 1 in the clearings at the west end of the island, evidently following migrations of warblers and sparrows. These Sharp-shinned Hawks attempted to drive the Sparrow Hawks off the clearings, where the latter were feeding solely on grasshoppers. Owing to pursuit by hawks the Savannah and Song Sparrows developed a zigzag manner of flight whenever flushed, which would do credit to a Woodcock. No Grouse of any sort were seen on the island. The numbers of Great Horned Owls and Coyotes probably account for this. The Great Horned Owl perches over the Moose runs along the margins of the swamps or other trails and picks up many a rabbit or hare at dusk. In the dense forests birds were seldom seen. The only clearings were seen around Washington Harbor and the small clearings at the four resorts. It was in these clearings that much of the bird life was observed. In the future

development of the island for park purposes more clearings should be provided."

Captain Donald Baxter MacMillan, who in early September, anchored his vessel, the Bowdoin, in the harbor of Sydney, N. S., on his way home from the exploration of northern Greenland and Ellesmere Land, brought with him, from his fifteen months in the far north, much new scientific data in the fields of geology, meteorology, and ornithology. Among the most unusual ornithological specimens he has are three White Gyrfalcons, never before successfully brought south. Captain MacMillan plans to return to the arctic region next summer.

A record of remaining nearly nine hours in the air in a motorless aeroplane, or Glider, has been recently established in France. This seems to be solving the problem of soaring flight, a subject which has been given much study by certain advanced ornithologists.

Among a number of rare ornithological works being offered for sale by Treat's Book Shop of Atlanta is a set of the rare *Birds of America*, by John James Audubon. This set is in the Edinburgh 1831-1839 edition, in elephant folio size. The price asked, $3150, makes these probably the most expensive of all books on birds now being offered for sale by any dealer or collector.

Carl R. Smith, writing in *The Gull*, September, 1924, says: "It is often said that all things come to him who waits. Although they are no longer common, I have found the Road Runner from the Upper Lake to Santa Barbara, in the Coast Range; near Hanford in the San Joaquin Valley, and in the Sierra foothills near Woodlake. Curious as to their speed, I have often chased them in a machine, only to have them dodge off the road into the brush or ditch, and the question of speed was left in doubt. On December 6, 1923, as I came out of King City and approached the long concrete bridge over the Salinas River, a Road Runner jumped off the guard rail along the approach of the bridge and started for the west bank, about a half-mile away. At 26 miles per hour the bird jumped to the side rails and I nearly ran by it, but by swerving in close and using the horn I had it going again. The pace it would stand without trying to dodge was around 20 miles per hour. A blast of the horn would increase this to 22 miles, but it soon dropped back to 20 miles. On reaching the further end of the bridge, the bird turned off and stopped in the open, showing no sign of distress or fear."

One of our new members is Mr. Archie Mumma of Dayton, Ohio, who does one of the most unique things ever attempted by bird-lovers: he has transferred to the piano the songs of several common birds. Mr. Mumma's lecture-recitals are highly commended. His interpretations have been recorded by the Duo-Art Piano and can be secured from that company. There are three records, including the songs of the Purple Martin, the Screech Owl, the Cardinal, the Song Sparrow, the White-throated Sparrow, the Wood Pewee, the Warbling Vireo, the Dove, and the Carolina Wren.

One of our new but most loyal members, Mrs. Frank M. Thomas,

Bowling Green, Kentucky, died October 20, 1924. Though a semi-invalid for several years, she was a great inspiration to the bird lovers who knew her.

Mr. Wm. I. Lyon, our Vice-President, who always does interesting things, brought along to the Nashville meeting a cage containing five Fox Sparrows and a Harris's Sparrow, which he had caught and banded at his station. After they had been inspected by the members of the W. O. C. and the I. B. B. A., they were released. It would be interesting to know what will become of them, especially the Harris's Sparrow, which is unknown in that section. Mr. Lyon also brought along several traps and devices he uses in his trapping of birds.

Our good friend, Johnson A. Neff, of Marionville, Missouri, who is now doing graduate work in the Oregon Agricultural College, has chosen for his thesis *The Economic Status of the Common Woodpecker in Relation to Oregon Horticulture*. In collecting material he is traveling all over the state. After he has finished his M.S. degree, Mr. Neff plans to return to his old home and devote his life to horticulture and ornithology.

Mrs. Lewis Mounts, whose husband teaches in the Ballard Normal School of Macon, Georgia, reports that she has organized two bird clubs in that school which are thriving. Two trips are taken afield weekly. All their work is tied up with journalism, since items are published weekly about the activities of the club.

Mr. Frank Bruen, Bristol, Connecticut, who is still active in spite of approaching age, reports that on October 25, while out with the Hartford Bird Study Club, he found two Snow Buntings, a record-breaker for earliness. All native species, he says, are exceptionally scarce this year.

Mr. Harry Applegate, Deputy Game Warden of Kentucky, is "on the job." A number of times recently he has brought to trial violators of the Kentucky game laws, particularly those affecting hunting birds and trapping fishes.

A news item from Shreveport, Louisiana, dated November 14, says that hundreds of wild ducks of several species have met death because of flying into open oil tanks. The streams and lakes have been reduced in number by the prolonged drouth and this is the reason for the birds' seeking the oil tanks, which from the air look so much like ponds.

Mr. Leonard W. Wing, East Lansing, Michigan, one of our newest members, reports the capture in one of his trips of an immature Harris Sparrow, positively identified by Mr. W. G. Fargo of Jackson, Michigan. Both of these bird men think this is the easternmost record of this plains species.

Mrs. Lena S. Milles, who lives in the very heart of Detroit, Michigan, reports that Yellow-billed Cuckoos nest within sight of her window, that Wood Thrushes nest in an adjoining block, and that other so-called "wild" birds are common.

The Audubon Association of the Pacific, of which the President, A. S. Kibbe, is one of our members, publishes monthly a leaflet called *The Gull.* This little paper is always full of interesting items and nearly always contains a complete paper of great interest. not alone to the Pacific bird lovers but to our own members in the Middle West.

The Division of Ornithology of the Massachusetts Department of Agriculture, has issued a bulletin called *Bird Migration and Distribution during the Year Ending November 30, 1923.* Since it was prepared under the direction of Mr. Edward H. Forbush, further words of commendation are needless.

The United States Biological Survey is sending out a questionnaire in an endeavor to ascertain the present status of the Golden Plover. The species has decreased enormously and is now apparently rare inland. Records of its occurrence should be reported to the Survey.

The Sioux City Bird Club issued at the beginning of the present school year a program for their entire year's work. They meet monthly, either for programs indoors or for field trips. Many of our most active members appear on this prospectus: Charles J. Spiker, Walter W. Bennett, Mrs. W. J. Hayward, Dr. T. C. Stephens, and others.

The Forty-second Stated Meeting of the American Ornithologists' Union was held in Pittsburgh, Pennsylvania, November 11-13. Quite a large number of our members in that area were in attendance and several appeared on programs. Four of our members on the Local Committee of Arrangements were W. E. Clyde Todd, Bayard H. Christy, George M. Sutton, and Lynds Jones.

Mr. R. C. McGregor, the only one of our members living in the Philippines, says in a note to the Treasurer that he spent the months of May and June on a collecting trip in Samoa.

Professor W. E. Praeger of Kalamazoo College, Michigan, has been chosen president of the chapter in his town of *The Friends of Our Native Landscape,* an organization designed to aid and protect all phases of wild nature.

Mrs. A. S. Putnam of Manistique, Michigan, who was with Professor Sherzer's Alaskan party this summer, reports many interesting things on her trip: "On an iceberg just broken off from Taku Glacier were two dozen Ducks taking a free ride and enjoying it. Another iceberg carried a load of Gulls. One of my pleasantest memories of the trip was the wonderful singing of Veeries on the high wooded hills back of Juneau and Katchikan, close to the business section. I am sorry to report cats in Alaska. It is especially bad to introduce them into a new country. The birds are at their mercy there even more than here."—Condensed from Michigan Audubon Society *Quarterly News-Letter.*

THE WILSON BULLETIN

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EDITORIAL

With this issue the present editor concludes a service as the editor in chief of The Wilson Bulletin and its several forbears, of thirty-six years — quite long enough, certainly, for one man. Dr. T. C. Stephens, of Sioux City, Iowa, takes up the work with the 1925 volume, and therefore all communications which relate to the editorial management should be addressed to him, at Morningside College. Requests for back numbers should continue to be addressed to Lynds Jones, Oberlin, Ohio.

Both the A. O. U. meeting at Pittsburg and the joint meetings of the Wilson Ornithological Club, Inland Bird Banding Association, and The Tennessee Ornithological Society, were eminently worth the effort and expense that were involved in attendance upon them. The value of these meetings lies more in the personal associations made possible than in the program that is presented. Therefore every member ought to begin now to plan to attend the next meeting. Every organization must have at least a nucleus of its members who enjoy personal association with each other if it is to be worthyc of continuation, and the larger this nucleus is the more vigorous will the organization be and the better work it will be able to accomplish. Let's make this matter of regular attendance upon meetings our personal business.

GENERAL NOTES

STARLING IN MICHIGAN

On September 14, 1924, the writer found a flock of ten Starlings (*Sturnus vulgaris*) near Ann Arbor. An adult female was collected from this flock by J. Van Tyne on September 17.

CLAUDE H. VAN TYNE II.

ENGLISH SPARROW EATEN BY SHRIKE

While going over some of my field notes I noticed a record of my having observed a Shrike eating an English Sparrow, and since in this connection I recalled Mr. B. F. Mounts' article in The Bulletin, December, 1923, p. 221, I am submitting my notes, which were taken at Norman, Oklahoma, March 23, 1915.

I saw a Shrike (presumably the White-rumped, *L. l. excubitorides*) eating the rear half of a small bird and since I had never witnessed this supposedly frequent performance I was very much interested. Presently the Shrike hung the remains of its victim on a thorn of the hedge tree in which it was perched and flew to another bough about a foot away. As I drew nearer the scene the Shrike evidenced a desire to regain its prey, and before I could interfere it siezed the remains of the bird in its claws and was about to fly away with it. By this time I had picked up some small stones which I threw at the Shrike and caused it to drop its prey. I lost no time in picking up the mutilated carcass and to my surprise I found that it was the remains of an English Sparrow which had been so recently killed that its flesh was still warm. While I was thus engaged, the Shrike sat nearby and watched me very closely. When I tossed the remains of the Sparrow on the ground by the bush in which the Shrike sat, it immediately regained its prey and mumbling a few discordant notes bore the mutilated body away in its claws.

E. D. CRABB.
Public Museum, Milwaukee, Wis.

LITTLE BLUE HERONS IN MONTGOMERY COUNTY, OHIO

The presence of the Little Blue Heron (*Florida caerulea*) in Montgomery County, Ohio, throughout the month of August, was the most interesting local ornithological event of the summer of 1924. I first saw this species, eight birds in the white plumage, at a small artificial lake about eight miles north of the city of Dayton, on the 2nd of August. Ten visits to this lake were made during the month, and on each occasion from three to twelve of these herons were seen; the last were observed on the 31st of August.

Never as wary as the Great Blue Herons, these birds became tamer at each visit, and toward the end of their stay often would allow me to approach within a hundred feet without showing signs of fear; the con-

stant presence of many fishermen about the lake was probably the cause of the increasing confidence of these naturally shy birds, and during their whole stay they were not fired upon, as far as I knew. The greenish-yellow color of the legs was the chief mark of identification, although the dusky tips of the primaries were observable on a few occasions as a bird sailed on set wings preparatory to alighting; otherwise, in every individual, the plumage appeared entirely white. They fed boldly in the open, walking at a fairly even gait through the shallow water, frequently striking at fish, and, as attested by a silvery flash, were often successful in their hunting.

It seems strange, indeed, that these beautiful creatures, accustomed to the quiet swamps and lagoons of the south, should desire to take a summer trip northward; and stranger still that they should elect to spend a month at a rather public artificial lake, in a thickly settled locality, where noisy electric cars, humming automobiles, and buzzing airplanes are in nowise suggestive of the wilds of their southern habitat. The fact that no birds in adult plumage accompanied their white kin is cause for even greater wonderment.

BEN J. BLINCOE.

October 30, 1924.

COMMUNICATIONS

A NATIONAL PARK IN SOUTHERN MOUNTAINS

That a splendid new National Park will be established, in the high Appalachian Mountains of North Carolina and Tennessee, now seems assured. Dr. Work, Secretary of the Interior, has appointed a commission and charged them with selecting the most beautiful and otherwise suitable area in these mountains in order that he may recommend its purchase to Congress. This commission, composed of five nationally known park experts, has spent much time afield during the current summer and fall, inspecting the various sites offered and have expressed themselves as being impressed with the scenic values of many locations far beyond their expectations. Ornithologists and nature lovers generally are keenly interested in the plan of conserving intact a large area in these mountains where primitive faunal and floral conditions are still extant and where they may be so kept for all time. Much of this rugged mountain area has already been destroyed by lumbering activities and the time for saving a large primitive area cannot be further delayed. The peaks in this area are the highest in America east of the Rockies, rising to more than 6700 feet. Their slopes are clad with the most beautiful and varied forests in the world and here may be found birds, animals and other forms of animate life which have been extirpated elsewhere. It is an area of exceeding interest to the naturalist, as the writer can testify after a number of field trips there. Apparently the most desirable section from all standpoints is that portion of the Great Smoky Mountains, which includes Mt. LéConte (6678), Mt. Guyot (6636), Clingmans Dome (6666), and the Balsam Mountains as far eastward as Waynesville, N. C. Such an area would perhaps include a thousand square miles and would be entirely different from any other National Park. Other areas being carefully considered are the Lindville Mountains, east of Asheville, and the Blue Ridge Mountains near Highlands, N. C., frequently spoken of as "The Sapphire Country."

Many other park sites have been considered in the eastern U. S., but the concensus of opinion is that the site referred to above should come first. After the precedent of acquiring this has been established by the Government it is likely that the acquisition of other Parks will rapidly come about until all those of outstanding merit will be made available to the public.

ALBERT F. GANIER.

Nashville, Tenn., Sept. 1, 1924.

BIRD BANDING DEPARTMENT

Under the Direction of Wm. I. Lyon, Waukegan, Ill.

REPORT FROM THE BIOLOGICAL SURVEY

Mr. Lincoln has made three field trips for the purpose of doing bird-banding work in your district. The first one during March, 1923, resulted in the banding of 489 ducks at the Sanganois Club near Browning, Illinois. The second trip, made during the fall of the same year, resulted in the banding of 1,338 ducks, while the third trip to the Beaver Islands, in northern Lake Michigan, in the month of July, 1923, resulted in the banding of 658 Caspian Terns and Herring Gulls. The following list indicates the number of banded birds that have been reported from the different states in the territory of the Inland Association from July 1, 1923, to February 1, 1924:

Michigan, 1452; Minnesota, 1175; Illinois, 1088; Ohio, 821; Wisconsin, 715; Iowa, 580; Sask, 560; Manitoba, 549; Indiana, 444; Missouri, 378. Texas, 278; So. Dakota, 243; Tennessee, 50; Kansas, 48; Alberta, 32; Oklahoma, 33—Total, 8,446.

HELP US FORM CHAINS

A suggestion comes from the Biological Survey that we urge every co-operator to endeavor to secure the interest of some person in his neighborhood who might establish a station that would form a connecting link with his own. In this way the basic idea of a chain of trapping stations would be carried out and you will readily see that if a suitable number of persons may be interested, it should ultimately be possible to establish a well connected chain of banding stations.

In selecting this person to co-operate with you, you should be very careful to find someone who has the ability as well as the suitable grounds. If you know of someone that is a desirable and would like to have the Inland Secretary take up the matter by mail, I will be glad to assist in any way that I can. If every co-operator will make an effort to find another person who is interested, or if they will just attempt to get some publicity in their local papers, it will all help the work very much.

We need more matter on Bird Banding. We are not getting enough support from the Banders, themselves, and would like more of the interesting incidents that happen at each banding station. We are very sorry that we are unable to get reports from all of the Banders so that our district total would be larger. As it is now, our district total is only of those that are willing to co-operate with us. Many of those that we write to, do not answer at all, but we feel that we have a report of all those who are interested in the work. If we try to make another report next year, we will have to have more support. In the meantime, please send in the interesting happenings of each season, and help us make this department a success.

"Many specimens of bird and marine life in the Miami, Florida, district," says a newspaper dispatch from that city "have been captured

and preserved for the Cleveland, Ohio, Museum of Natural History by Ernest G. Holt and Dr. George W. Crile, representatives of the museum. The birds will be mounted in and around the nests to reproduce the conditions under which they were secured. The scientists have, in most cases, three of the adult specimens, one male and one female, for mounting, and another adult for dissection and study. They also have a number of the small birds which were taken from the nests. The birds range in size from two tiny Hummingbirds to the huge Pelicans. Included in the display are a Man-o'-war Bird, Terns, Herons, Pelicans, Cormorants, Herring Gulls, and others. The scientists have three species of the Heron; the White Heron was especially difficult to take, as it required great patience on the part of the hunters. Mr. Holt is still in Miami collecting."

Professor Dayton Stoner has had published by the Iowa Academy of Science an article on "Behavior of Trapped and Banded Birds." Professor Stoner, as usual, has given here a delightful and very readable record of his experiences in this new and pioneer field of bird study.

Wm. I. Lyon, Waukegan, Illinois, reports the following: In December of 1921, Chickadees, Nuthatches, and 2 Downy Woodpeckers, were trapped and banded in two very crude traps. During the year of 1922 the traps were much improved but only 13 Chickadees, 8 Downy Woodpeckers, and I think, no Nuthatches were trapped. Nineteen twenty-three was a great year for improvement in the tree-trap business, and when the fall months arrived we were able to trap so many (9) Yellow-bellied Sapsuckers, 3 Black and White Creeping Warblers, and 92 Brown Creepers, but only 2 Chickadees, 9 Woodpeckers and 2 Nuthatches. During our observation on the Waukegan Flats, we had noted many Red-breasted Nuthatches, but never a one at the trapping station. For some strange reason, the Chickadees and the Nuthatches seem to have been absent from our district during the last two years.

Adolf L. Holm, Lundar, Manitoba, reports the following: "We had an occasion to move a house, of which a window was broken. On a ledge just inside the window was a Robin's nest with four young in it. I nailed a box on its side on a tree fourteen feet away and put the nest in it. For two days the parent Robins did not give their young anything to eat, although they were near-by with food for them. But somebody else gave them food. A wren had his nest a few feet away; when feeding his own babies he saw the hungry little Robins with their open mouths when he passed by. He also cleaned their nest, and the funniest of all he tried to sit on them, but as he was no larger than the Robins themselves he could not cover more than a small part of them. After the two days the parent Robins got enough courage to start feeding their young themselves, and chased the wren away from them, although the wren fed them once in a while when the Robins were not near; but soon quit when he got no 'thanks' from them for saving their young. No doubt the wren would have continued feeding the little Robins had their parents left them, but I am afraid that he would have had a hard time to get enough for them as he had eight babies himself to care for."

PUBLICATIONS REVIEWED

OBSERVATIONS UPON THE BIRD LIFE OF DEATH VALLEY. By JOSEPH GRINNELL. Proc. Calif. Acad. Sci., XIII, pp. 43-109. 1923.

This paper is a report of another investigation by the Museum of Vertebrate Zoölogy, under the patronage of Miss Annie M. Alexander. Death Valley lies in a north and south direction between high mountain ranges. Its deepest part is below sea-level, and presents extreme desert conditions. This sparse vegetation reacts directly on the animal life, and the bird life is relatively meager because of lack of food and shelter. Dr. Grinnell's present study, together with that of Dr. A. K. Fisher (1893), furnishes a pretty complete survey of the avifauna of this very unique region.

Only 124 species are admitted to the present list, notwithstanding the fact that it is regarded as a migration highway. Of these 25 are considered as casual visitants; forty-five as regular transients; thirty-two as winter visitants. Of the ten summer visitants only one is known to breed below the sea-level. There are twelve permanent residents, all of which are believed to nest in the below-sea-level area. The ecological discussion of the region and the authentic catalogue of species are the outstanding features of this paper.

T. C. STEPHENS.

HERONS OF THE UNITED STATES. Bulletin No. 5, of the National Association of the Audubon Societies. 1924.

This is a 38-page pamphlet, which has for its purpose the resume of the present status of all of the herons that are native to North America in comparison to their status before the Audubon Society began its intensive campaign to save these interesting birds from threatened complete extinction because of the trade in feathers for millinery purposes. Each of the species is represented in color by Louis Agassiz Fuertes, besides several half-tone cuts of several of the species. It will prove to be a useful piece of literature.

L. J.

Publications of the Wilson Ornithological Club

The complete series consists of the following publications:

The Ornithologist and Oologist Semi-Annual, three volumes, 5 numbers.

The Wilson Quarterly, one volume, two numbers.

The Journal, two numbers.

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The Wilson Quarterly, both numbers.

The Wilson Bulletin, Vol. 10, No. 5; Vol. 16, No. 1.

The available numbers, to Vol. 32, will be sold at the rate of one dollar a volume.

— ADDRESS —

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STEAR LABORATORY, ORTELEN, OHIO

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